CANADIAN PUBLIC HEALTH JOURNAL

VOL. XXIII June, 1932 No. 6

The Development of Public Health*

DR. W. J. BELL

Deputy Minister of Health, Ontario

TO appreciate the status and accomplishments of public health it is essential that one review briefly the history of disease control from the earliest times at which reference to it is made, and through the centuries of development up to the present; and when one would attempt to forecast the public health activities of even the immediate future, this study is essential.

Such health protection as existed in early times was prompted by,—

(1) The instinct of self-preservation.
(2) The desire of the individual to promote his comfort and convenience, and
(3) Although in a much lesser degree, an appeal to the aesthetic side of man's nature.

While the reaction in health protection by primitive man was purely empirical, our analysis of the situation to-day would disclose the fact that our present system of health protection, called by us "modern public health," is based on the same elementary foundation. Science has in these modern days taken the place of empiricism; civil laws have taken the place of edicts based on religious dogma; education has taken the place of superstition and witchcraft; and modern society has recognised that community interests must take precedence over the interests of the individual and that the individual as a member of the community must carry his share of responsibility in protecting the group.

As man departed from the nomadic type of living, developed trade routes and commenced to establish the community type of living, disease began to appear. The earliest records of this development we find in the years from 10,000 B.C. to 7000 B.C. At this period there was a close connection between primitive medicine and primitive religion. Edicts dealing with health and hygiene were part of the religious code and illness was considered punishment for sin rather than a reasonable consequence of the action of principles relating to natural phenomena. Religious codes contained practically all that was known or taught

*Presented at the Combined Sessions of the 21st Annual Meeting, Canadian Public Health Association, and 18th Annual Meeting, Ontario Health Officers' Association, Toronto, May 26, 1932.

regarding sanitation and hygiene and the clergy of the period were the health teachers.

It is interesting to note that one of the earliest developments along public health lines related to water supply and it is still further interesting to find that in primitive times, deliberate fouling of a water supply was regarded as a sin; that is, it was an offence in a religious sense punishable by the penalties imposed at the period for such offences. To-day the fouling of a water supply is a civil, or it may be a criminal offence, punishable by penalties imposed by the civil or criminal courts.

Another early health practice dealt with the disposal of refuse. To this we find reference at the same early period, especially in such historical data as have come to light regarding ancient Crete. We find there reference to sewers and primitive sewage disposal, roof drainage, ventilation, disposal of garbage and the installation of bathing facilities in living quarters.

When we study the historical records of Egypt about the tenth century B.C., we find that in an empirical fashion personal and community hygiene were established and practised on a fairly extensive scale, considering the lack of scientific knowledge of that day.

Our knowledge of public health as practised by the Jews is found in the Pentateuch and the edicts of Moses laid down for the guidance and government of the Israelites, probably derived from Moses' contact with Egypt. It was in its entirety set up as a religious direction to the Jewish people and it formed a splendid combination to direct the conduct of the individual in relation to his Maker, his neighbour, his family and himself.

Rome saw probably the highest standard of hygiene of the pre-Christian era. Its baths, its fountains, its aqueducts and the cleanliness of its streets, all under the sanitary control of officers called "Ædiles." presented the sanitary zenith of ancient times. Every city had sewerage, disposal of garbage and other waste, public and private latrines, and what must be considered for the period, a satisfactory water supply. In this period we find the first reference to the communicability of disease—not proven, only suspected or suggested. Plutarch and Lucretius claimed that disease was sometimes contagious. Varro, in the first century B.C., suggested that malaria might be due to minute invisible bodies. Galen suggested the infectiousness of phthisis.

With the Roman invasion of Britain, the invaders brought with them their sanitary standards and practices but, while during the first five centuries of the Christian era there are evidences of sanitation and sanitary practices in Britain, no data exist adequate for the formation of an opinion regarding the health of the people, or the influence of these sanitary installations and practices on community health.

With the Anglo-Saxon invasion of Britain this highly cultured

civilisation disappeared and continued very much in the background through the Middle Ages and the Dark Ages up to the sixteenth century, even though in the year 1388 we find the recording of the first national sanitary act. This act apparently indicated only a mental reaction of its promoters as it never received sufficient support to enable its being enforced.

In spite of the fact that the standard of personal hygiene was low, we find that in the fourteenth century attempts were made by civil authorities to control the quality and price of foods, especially ale and bread. Soap was introduced into England and some consideration was given to matters of personal hygiene. At this period we have the first reference to quarantine, but one amusing fact regarding quarantine in the Middle Ages was that frequently the quarantine was practised by the well individual, who ran away from the disease, rather than as in modern times, by the segregation of the infected individual and his contacts.

Statutory quarantine was introduced into England in the year 1513 as a result of epidemics of plague. Under this statute houses in which infection existed were required to be marked and the inhabitants thereof who required to be out on urgent business were compelled to carry a white rod.

By the fourteenth century, leprosy, plague, consumption, itch, erysipelas, conjunctivitis and fevers with rashes had come to be considered communicable and to be spread by personal contact. In the year 1346, cases of this nature were required to be investigated by men of knowledge, who either set them free with a certificate or had them segregated. The preventive value of isolation was recognised and was applied to contacts of plague, as well as to actual cases.

About this time in England we find industrial activity assuming very considerable proportions and coincident with this development we find the first references to occupational disease in lead and mercurial poisoning and respiratory conditions due to the inhalation of dusts.

The sixteenth century ushers in the Renaissance and with this period we connect such names as Linacre, who founded the Royal College of Physicians in England; Vesalius, who wrote on the structure of the human body; in Italy, Frascatora, and in France, De Baillou, both of whom wrote fairly extensively on the causation of disease.

At this period we find increasing attention to personal hygiene and improvement in the regular dietary of the people. The use of vegetables became widespread. Meat was eaten extensively. Fruits, sugar and sweets were on the dietary list of the well-to-do. Ale and beer still remained the staple drink of the masses.

In the historical records of the voyages of Drake and Hawkins we find reference to what is now recognised as the deficiency disease—scurvy—and further, the recognition of citrus fruit juice as the important agent for preventing its onset. At a later date, by order of the

British Board of Trade, ships were required to carry lime juice to be issued regularly to passengers and crew, and as a result of this ordinance, British ships came to be called "lime juicers."

The seventeenth century practically marks the beginning of scientific observation and connected with this period we find the name of Harvey, who wrote on scientific physiology based on experiment. In this period we find also the names of Galileo, who invented the telescope, Leeuwenhoek, who developed the microscope, Malpighi, who described the minute structure of many organs of the body, and John Graunt, who introduced the study of medical statistics.

Segregation continued to be the principal method employed for the control of communicable disease and quarantine was established on houses containing infection. This led at that time as it does to-day, though less frequently now, to concealment of the disease and the promotion of its spread. For protection against communicable disease infection we find reference to the wearing of amulets and charms, fumigation by the burning of sulphur and disinfection with vinegar.

The advent of the eighteenth century brought in a period remarkable for its scientific advances and also remarkable in that community thought took the place of individualism, so that in this period we find the early developments of social welfare, in health education, sanitation, hospitals, schools, libraries, parks and art galleries. While the scientific outlook of the period made such humanitarian effort as was attempted appear colder than that of the Middle Ages, still the Eighteenth Century realised that social questions must be analysed and concrete solutions reached to replace the Middle Ages' attitude of pity. With the Eighteenth Century attitude of prevention, pity became less significant.

The closing decades of the eighteenth century were really the dawn of improved health and well-being. This century saw the rise of preventive medicine in the development of a school of medical hygienists, among whom we should mention Buffon and Linnaeus, who directed attention to the importance of natural history; John Hunter, the famous naturalist and surgeon; Ramazzini, who wrote on occupational diseases; Franck in Bavaria, whose work—a complete system of medical polity—contains the essentials of modern public hygiene; Richard Mead, who wrote on pestilential contagion and methods used to prevent it; John Pringle, James Lind and Gilbert Blane, who wrote on medicine and hygiene in the army and navy and methods of preventing communicable disease. In the later years of the century, we find such names as Percival, Ferriar, Currie and Haygarth, who advocated many changes in urban hygiene and in industry and at the same time, we find the name of Jenner connected with smallpox; Huxham and Baker, who studied the relation between cause and effect in food poisoning, and Thackrah, who wrote on the effect of industrial processes on health.

Jenner laid the foundation of that branch of public health which we now recognise as immunology.

The nineteenth century ushered in a period of scientific progress as

well as a period of marked industrial activity, with which was connected a tremendous increase in the population of industrial centres. With this increased industrial activity, we note the development and recognition of many types of ill-health associated with industry and industrial processes. An outcome of this was the Factory Act of 1833, the foundation of our modern factory legislation, in connection with which we find the first reference to factory inspectors. The working of this compulsory health legislation soon made it apparent to industrial operators that the safeguarding of health and accident prevention were important factors in the successful promotion of industry and it was not long before factory legislation was accepted as good business from an economic point of view rather than just philanthropy. This is the attitude of our industrial leaders to-day. In 1833 the Registrar-General's Office was founded in England. In 1866 the second Public Health Act was passed, introducing a certain amount of compulsory health legislation, and in 1875 we find the third Public Health Act, also the Food and Drugs Act.

In the concluding quarter of the nineteenth century the development of science, especially the researches of Pasteur, Koch and their co-workers, revolutionized many of the older conceptions of health and disease. Education of the public in matters of hygiene brought about a change in the attitude of the citizens at large towards public health, and the State assumed matters affecting the health of the citizens as a primary responsibility of the State. This was the situation at the beginning of the twentieth century—the century in which public health progress has made wonderful strides. From very early times it has been almost uniformly true that progress in public health has been initiated and stimulated only by some very unfortunate experience, and even to-day when we are comparatively well informed, we frequently require an outbreak of typhoid fever with several deaths to impress upon people the importance of safeguarding milk by pasteurization. We frequently require to pass through a similar experience in connection with a water-borne infection in order to have the water supply adequately protected. Many other examples of a similar type might be quoted.

To pursue further our thought regarding public health progress following disaster, we must refer to the world's greatest tragedy. The cataclysm of the Great War, requiring the service of every physically fit man between the ages of 18 and 45, revealed the fact that through physical handicap, an unexpectedly high proportion of the male population of military age was unfit for war service, and an analysis of the causes producing this condition showed that a tremendous proportion of the disability was preventable.

This information stimulated greater interest in health, in physical disability and in disease prevention, than had ever been experienced in any previous time. Further, war service required that men be kept physically fit and to this end much progress was made in epidemiology,

immunology, sanitation and public health education. Child hygiene was given a great deal of attention with the ultimate object of developing a young adult physically fit not only for war service, but more important still, for taking his place and standing up physically in the strenuous industrial life and competition of the present day.

We now recognise three main activities in public health:—

(1) Laboratory investigation and research.
(2) Practical application by trained field workers of the scientific information developed, and
(3) Education of the general public in matters of health.

The question at the moment in this brief survey of development and progress is best stated in the words of the man on the street,—"Where do we go from here?" It would probably be well before going anywhere, to sit down quietly, seriously and logically to study what we complacently refer to as our accomplishments and achievements in public health; it may be to consolidate what we definitely find we have gained; it may be accurately to assess the value of our gains in the light of expenditure, effort and personnel engaged; it must be, in these days of cold business and practical public health, to strike a reasonable balance between effort and accomplishment and to determine that our effort is so organized as to give reasonable promise of economically achieving our objective.

An analysis of our activities up to date indicates that we have made considerable progress in hygiene and public health as it affects general sanitation, the hygiene of the infant, the young adult and the expectant mother. Hygiene as applied to industry is receiving an increasing amount of scientific consideration with remarkably good results. Communicable disease is being prevented to an ever increasing extent but a further analysis of mortality statistics indicates that in the age groups of 40 and over, certain groups of diseases are showing a marked and ever increasing importance in the mortality tables.

I submit that the immediate need in public health is a serious consideration of the subject of adult health and I suggest that this should be the branch of public health activity on which the greatest stress might, for the immediate future, be reasonably placed. The cardiovascular group of diseases is taking a very serious toll of our adult population at an age when the training and experience of these men should make them tremendously useful in industrial and business life. Cancer shows a marked trend upwards. Tuberculosis in the younger age groups is still an important factor as a cause of death but in the age periods over forty it remains practically stationary. The cardiovascular diseases and cancer are assuming proportions which may properly be considered to be alarming and to present a major challenge to the medical investigator. While the solution of these problems, presented in present day mortality and morbidity records, appears very difficult, yet in the light of our health and hygiene achievements to date, we are encouraged in our belief that these problems will be solved.

Milk Sanitation in Canada*

R. H. MURRAY, C.E.

Director, Division of Sanitation, Saskatchewan Department of Public Health, Regina

MILK sanitation in Canada is under the direction of the province and the municipality, the federal authority acting only in an advisory capacity or in case of an emergency. The provinces, accordingly, prepare their own milk laws and regulations, stipulate standards of quality, and delegate to municipalities such authority as may seem advisable. Broadly speaking, cities which have properly organized health departments are given authority to pass and enforce their own milk by-laws or ordinances, the province generally retaining the supervision of pasteurizing plants.

There is no definite record of any organized provincial or municipal control of milk supplies in Canada until the year 1894, when the city of Quebec passed its first milk ordinance, to be followed by Victoria, Winnipeg and other cities and by the province of British Columbia.

In early years, milk control under the provincial authorities was a function of the departments of agriculture, whose officials, in stimulating the dairy industry, undertook some measure of sanitary supervision over dairy premises and methods. To-day there is, or should be, a definite line drawn between the commercial side of dairying as fostered by the officials of the departments of agriculture with a view to quantity production, and the public health aspect, that of placing on the market a safe product. While the majority of our provincial governments have recognized the right of the provincial health department to exclusive control of all milk sanitation, there are, unfortunately, one or two provinces in which the department of health is not yet in this strategic position.

The late Dr. Charles J. Hastings, for nineteen years Medical Officer of Health of Toronto, said:

"There are two activities in connection with every department of public health that are prerequisite to anything approaching efficient administration. These are the safeguarding of the water supply and the safeguarding of the food supply, with special reference to milk. Any community failing in these two activities is guilty of criminal negligence, inasmuch as sins of omission, in public health administration at least, are no less culpable than sins of commission."

A survey of the measures adopted by provinces and cities of the Dominion to ensure safe milk supplies shows that view shared by public health departments throughout Canada. In 24 of our largest cities, representing a total population of 3,067,362, or 54 per cent of the urban population of the Dominion (that is, of cities, towns and villages), 72.4 per cent of all milk sold is scientifi-

Presented at the 60th Annual Meeting of the American Public Health Association, Public Health Engineering Section, Montreal, September, 1931.

cally pasteurized and 67.3 per cent of the total milk supply comes from cows which have been tuberculin tested.

The average consumption[2] of milk in 21 cities of the Dominion was given as 0.71 pints per day in 1925. In recent years, much educational work has been undertaken by the National Dairy Council of Canada and other organizations interested in the promotion of the milk industry, and the *per capita* consumption is now considerably higher.

The too rigid enforcement of certain constructional requirements and equipment in dairy premises might easily discourage the farmer from entering, or continuing in the dairy business. Milk control officials realize that a safe milk supply may be produced from indifferently equipped dairy premises, provided that the persons engaged in the production have acquired a sanitary conscience and a real appreciation of personal hygiene as it may affect the prevention of milk-borne disease. Our health officials do not wish to discourage those who have as their slogan "Drink more milk," but our particular concern is that the public shall drink safe milk.

EPIDEMICS OF MILK-BORNE DISEASE

Canada has had her share of milk-borne epidemics and a statement of these, so far as records are available, is appended. The records of certain cities, particularly Winnipeg, in earlier years, are more complete than others, and this fact, together with the energy displayed by the City Department of Health in tracing epidemics to their source, accounts for the records of these showing a number of minor epidemics.

Of the 38 epidemics recorded in the Dominion which were responsible for 6919 cases and 618 deaths, 3 reached serious proportions: the Montreal typhoid fever epidemic, 1927, with 5002 cases and 533 deaths; the Kirkland Lake, Ontario, epidemic of septic sore throat, 1930, with 457 cases and 4 deaths; and the St. Catharines, Ontario, paratyphoid fever epidemic, 1931, with 458 cases and 1 death. A reference to the cause of these 3 epidemics may be appropriate here.

Montreal Epidemic

The following is an extract from the conclusions of the board of officers of the United States Public Health Service, convened for the purpose of surveying the typhoid fever situation in Montreal, to determine measures necessary for the prevention of the spread of the infection from that city and vicinity into the United States.

"(1) The typhoid fever epidemic in Montreal was beyond reasonable doubt caused by infection distributed in the output of milk from the plant of the Montreal Dairy Company Ltd. in that city.

"(2) Though contributory infection may have been introduced into the milk at one or more of the four stations, or within the plant in Montreal, the preponderance of evidence is that the bulk of the infection was introduced into the milk at the farm sources and was enabled to multiply before the milk reached the city plant.

"(3) Though it was barely possible for a very small proportion of whatever infection was in the milk to pass through the pasteurization machine

without being heated long enough and at a high enough temperature to be destroyed, the preponderance of evidence is that a very considerable proportion of the infected milk was passed through and distributed from the plant without being subjected to pasteurization treatment."

Kirkland Lake (Ontario) Epidemic

In this epidemic of septic sore throat, 90 per cent of the cases obtained their milk from one raw milk dairy. One cow in this dairy was excreting haemolyticus streptococci indistinguishable from organisms found in throats of the patients. The dairy was closed and pasteurization adopted. To-day Kirkland Lake has a compulsory pasteurization by-law.

St. Catharines (Ontario) Epidemic

Preliminary investigations of this outbreak of paratyphoid fever have elicited the following information:

About May 1, 1931, a new pasteurization plant of the twin unit type was installed in the city. The milk was pumped into the 2 units, both of which were connected to the one outlet pipe line which led to a common pump through which the milk was discharged to the cooler and bottler. A wall separated the pasteurizer and the bottler. One man was responsible for pasteurizing the milk. When one vat was pasteurized, the men on the other side of the wall were advised that it was ready to be pumped to the cooler. The heating of the other vat was then started and while one was emptying, the other was treating the next batch.

On or about June 23rd, the contents of one vat had been pasteurized, while the other vat held raw milk. The man working on the bottler apparently opened the wrong valve and permitted raw instead of pasteurized milk to reach the cooler.

How long this condition continued is not known, but the date of its occurrence was fairly closely established and was corroborated by the epidemiological evidence. Practically all of the early cases were on the same milk route. The equipment was faulty in that it afforded an opportunity for a mistake of this kind, and, in addition, the outlet valves were of a type which might permit of leakage. Both the city and provincial health departments stress the fact that legislation did not give engineers of the Provincial Health Department authority to inspect this plant for defects before it was placed in operation.

TUBERCULIN TESTING

Tuberculin testing is not without its opponents, but the consensus of opinion is that it is the most efficient measure known to ensure that raw milk is free from bovine tubercle bacilli. In Canada, 1921 to 1924, more than 50 per cent of the deaths from tuberculosis among children under 15 years of age were non-pulmonary.[3] Rosenau[4] shows that 24 per cent of the cases of non-pulmonary tuberculosis investigated were caused by the bovine tubercle bacillus, and the findings of the British Medical Research Council[5] substantially confirm this.

The co-operation of the Dominion Department of Agriculture with the departments of public health has been invaluable in obtaining tubercle bacillus-free milk supplies in Canada. Owing to the ease with which bovine tuberculosis can be transmitted to man, the Health of Animals Branch of

the Federal Department of Agriculture has extended its activities to assist municipalities in this regard. Eleven of the largest cities of the Dominion obtain their milk supply from tested herds. The total number of dairy cows in the Dominion is 3,683,453, and approximately 1,500,000, or 40 per cent, have been tuberculin tested by officials of the Department. The province of Prince Edward Island has been established as a "restricted area," and every cow is tuberculin tested. In addition, the departments of agriculture of the provinces of Quebec and British Columbia employ veterinaries to supplement the federal activities. In British Columbia and Nova Scotia, 80 per cent of all dairy cows have been tested; in the former, practically all cities and towns have a milk supply free from tubercle bacilli, and in Nova Scotia all cows on the mainland have been tested. Milk from the province of Quebec is exported to the United States under a special permit granted after proper inspection of the herds and shipping plants, this being supervised by the Veterinary Director-General at Ottawa.

Realizing that pasteurized milk is not yet possible in semi-urban areas, and that a tubercle bacillus-free milk supply is desirable, the province of Saskatchewan has prepared a model milk by-law for towns and villages. This provides, briefly: (*a*) for the licensing of all milk vendors by the municipality at a nominal fee; (*b*) for the inspection of the dairy premises of these vendors by an official reporting to the council on the advisability of granting or refusing a licence; and (*c*) that all milk vendors shall have had their cows tuberculin tested at their own expense within the previous 6 months by a qualified veterinary surgeon and shall produce a certificate that they are non-reactors; otherwise, a licence will be withheld. This by-law has already been passed by 50 towns and 125 villages in the province, representing 57 per cent of the entire town and village population.

THE DAIRY FARM

The requirements of the conscientious milk inspector regarding the conditions under which milk is produced on the farm are legion, but these may be reduced to a minimum as a foundation on which to build, as the farmers' circumstances permit. The minimum requirements are:

1. A clean and healthy herd.
2. A clean cow-barn with sufficient air space, light, ventilation and drainage.
3. The use of the proper type of milking pail.
4. A separate milk house with proper equipment for straining, cooling and filling milk into containers and for sterilizing utensils and containers.
5. A water supply of safe, sanitary quality.
6. Means for keeping the milk at a temperature of 50° F., or under, until shipped.
7. Rigid personal hygiene of employees, and hygienic methods of operating.

These are the esesntials for a raw milk supply low in bacterial count.

The requirement which appears to cause most trouble throughout the Dominion is the cooling of the milk by the producer and its maintenance at

a low temperature until delivered to the plant. Another difficulty is the large number of small producers owning a very limited number of cows. If we are to have safe milk, the small producer, who regards the sale of milk merely as a means of helping out the family income when times are bad, must be eliminated. The dairyman who is prepared to go into the business whole-heartedly must be encouraged to the exclusion of his indifferent neighbour, even if the latter is in more urgent need of supplementing his income. As a rule, the man who sells only a small quantity of milk has a correspondingly small appreciation of his responsibilities to protect the public.

The milk inspector provides the necessary medium for milk education and of first importance in this is the sediment test. To the average dairyman a statement that his milk must be dirty because the bacterial count is high, means little or nothing, but if he is shown the quantity of foreign material in his milk he sees something which he can understand, and is then amenable to reason and to milk discipline. The province of Quebec has, in the last 2 years, reorganized its system of milk control and achieved very satisfactory results in reducing milk counts by classification of dealers based on these counts.

Pasteurization

The report of the Committee on Milk of the Conference of State and Provincial Health Authorities of North America (1931)[6] makes several references to the dietary quality of pasteurized milk for infant feeding. Although fairly conclusive, the evidence is considered not entirely satisfactory, and the committee urges the Public Health Service to undertake studies immediately, so that definite conclusions may be reached.

Canada's pasteurization situation, with 18 cities and towns having compulsory pasteurization by-laws, and 72.4 per cent of the milk supplied to 24 of the largest cities pasteurized, is encouraging. Experience at Montreal, St. Catharines and elsewhere, indicates that the most vital problems facing health authorities, once pasteurization has been accepted, are to secure rigid supervision over the plant; to obtain equipment simple in design and free from defects, which will not be placed in operation until approved by a competent authority; to provide constant inspection and laboratory control, and to ensure that the operators at all times understand and appreciate the health significance and responsibility of their actions.

In spite of all devices, automatic and otherwise, for pasteurizing equipment, the possibility of personal negligence will always be real. It has been suggested that operators should be required to furnish proof of training and experience, and be licensed by the provincial or local health authority.

The standard definition of the process of pasteurization has been generally agreed upon throughout the Dominion, and the temperature of 145° F. and holding period of 30 minutes are believed to provide the necessary margin of safety.

EDUCATION AND LEGISLATION

Education and propaganda based upon established facts must not only accompany, but precede any effort to control successfully the public or the individual. So it is with milk sanitation. Education must precede legislation.

Education of the public to demand a safe milk supply can very often be accomplished successfully through women's organizations. The average male can be roused to enthusiasm over political and prohibition measures, but the protection of a milk supply by tuberculin testing of cattle or by pasteurization is not a common topic of discussion at the club, the office or the store. Bring the facts before the women's organizations and you can not only sell health protection, but each purchaser present becomes a possible agent to increase the sales.

The producer must understand how epidemics originate, appreciate the danger of carriers and the possibility of their unknown presence in his family and employees; he must know and understand the simple precautions necessary to protect the public. Successful educational methods, for the producer and the dealer, must stress the financial advantages of placing a safe and pure product on the market, for without this financial stimulus little can be accomplished.

In the smaller communities, a licence to sell milk can be withheld if the producer fails to carry out the improvements required by the local health authority, so he who improves his premises is encouraged by the limitation of his competitors. In cities, the price of milk can be graded on the basis of laboratory tests.

Provincial legislation has, of necessity, to be drafted so that it is equally applicable to milk supplied by a dairyman with 2 cows and by a city pasteurizing plant. It must be general in nature, but sufficiently specific to ensure a safe product for small communities which have no local milk by-law. There would seem to be no reason why every community, no matter how small if it has local government, should not enact a by-law for its protection against infected milk. Legislation must be accompanied by inspection to ensure compliance with the law. Inspection and licensing of all producers cannot successfully be carried out with the remote control provided by a provincial health department, and must be delegated to the local authority.

Pasteurization is not yet a practicable measure for small communities, the population of which neither warrants the establishment of a depot with suitable equipment nor justifies the appointment of an inspector to supervise the process. A safe, pasteurized milk supply continues to be the privilege of the urban and suburban population served by an efficient health department. With the knowledge available and the fact generally accepted that inspection alone, no matter how frequent or intensive, cannot guarantee a product incapable of spreading disease, the time is not far distant when all urban centres of the Dominion will have compulsory pasteurization by-laws in force.

The writer wishes to express his appreciation of the courtesy and kindness

extended by the Federal Department of Pensions and National Health, the Veterinary Director-General, the provincial health authorities of the nine provinces and the medical health officers of some 24 cities of the Dominion who so willingly provided the information which made possible this paper.

APPENDIX

EPIDEMICS FROM MILK-BORNE DISEASE AS RECORDED BY PROVINCES AND MUNICIPALITIES

Year	Municipality	Province	Disease	Cases	Deaths
1906	St. John	New Brunswick	Typhoid	40	3
1912	Winnipeg	Manitoba	Typhoid	92	7
1913	Calgary	Alberta	Scarlet	13	0
1916	Winnipeg	Manitoba	Typhoid	23	0
1918	Quebec	Quebec	Typhoid	23	2
1919	Winnipeg	Manitoba	Scarlet	73	0
1920	Regina	Saskatchewan	Typhoid	83	9
1921	Montreal	Quebec	Typhoid	5	0
1921	Vinelands	Ontario	Typhoid	20	0
1922	Quebec	Quebec	Typhoid	14	3
1922	Montreal	Quebec	Typhoid	33	3
1922	Winnipeg	Manitoba	Scarlet	29	0
1922	Winnipeg	Manitoba	Scarlet	10	0
1923	St. John	New Brunswick	Typhoid	10	0
1923	Sherbrooke	Quebec	Typhoid	7	2
1923	Arnprior	Ontario	Typhoid	6	0
1923	Hanover	Ontario	Typhoid	46	4
1924	Montreal	Quebec	Typhoid	16	2
1924	Quebec	Quebec	Typhoid	8	0
1924	Quebec	Quebec	Para-typhoid	5	0
1925	Winnipeg	Manitoba	Scarlet	28	0
1925	Winnipeg	Manitoba	Typhoid	9	2
1926	Winnipeg	Manitoba	Typhoid	15	0
1927	Montreal	Quebec	Typhoid	5002	533
1927	Chatham	Ontario	Typhoid	109	7
1927	Quebec	Quebec	Typhoid	12	0
1928	Quebec	Quebec	Typhoid	20	4
1928	Dundas	Ontario	Typhoid	13	0
1928	Timmins	Ontario	Typhoid	10	0
1928	Sturgeon Falls	Ontario	Typhoid	12	0
1929	Edmonton	Alberta	Scarlet	28	0
1929	Ameliasburg	Ontario	Typhoid	17	2
1930	Belleville	Ontario	Typhoid	18	3
1930	Kirkland Lake	Ontario	Septic sore throat	457	4
1930	S. Westminster	British Columbia	Typhoid	14	1
1930	Montreal	Quebec	Typhoid	130	26
1931	Kitchener	Ontario	Scarlet	11	0
1931	St. Catharines	Ontario	Para-typhoid	458	1
	Total			6919	618

	Epidemics	Cases	Deaths
Typhoid fever	28	5807	613
Para-typhoid fever	2	463	1
Scarlet fever	7	192	0
Septic sore throat	1	457	4
	38	6919	618

APPENDIX (Continued)

INFORMATION REGARDING PASTEURIZATION AND TUBERCULIN TESTING IN 24 OF THE LARGEST CITIES OF THE DOMINION
(Revised 1932)

Cities	Province	Population at 1931 census	Year first milk by-law passed	Percentage of milk pasteurized	No. of pasteurizing plants	Percentage of dairy cows T.B. tested
Montreal	Que.	810,925	1925	97%	33	100%
Toronto	Ont.	627,582	1914 (Pasteurizing)	100%	49	54%
Vancouver	B.C.	245,307	1923	10.1%	13	100%
Winnipeg	Man.	217,587	1898	65%	3	100% raw 25% past.
Hamilton	Ont.	154,914	1911 (Past. 1928)	100%	17	80%
Quebec	Que.	129,103	1894	40%	5	100%
Ottawa	Ont.	124,988	1917	98%	9	100%
Calgary	Alta.	83,362	1913	96%	4	100%
Edmonton	Alta.	78,829	1905	75%	5	100%
London	Ont.	71,022	1922	75%	15	25%
Windsor	Ont.	62,957	1904	100%	9	5%
Halifax	N.S.	58,939	1910	80%	7	95%
Regina	Sask.	53,034	1914	97%	5	100%
St. John	N.B.	46,640	1899	94.5%	6	100%
Saskatoon	Sask.	43,025	1914	100%	5	100%
Victoria	B.C.	38,441	1895	33%	4	100%
Three Rivers	Que.	35,197	1926	say 5%	2	say 5%
Kitchener	Ont.	30,261	1926	96%	10	50%
Brantford	Ont.	30,060	1919	99%	7	55%
Sherbrooke	Que.	28,888	1922	25%	1	100%
Ft. William	Ont.	26,075	....	98%	4	1%
St. Catharines	Ont.	24,703	1924	100%	5	5%
Kingston	Ont.	23,204	1916	50%	3	10%
Sydney	N.S.	22,319	1910	say 5%	2	say 5%
Total.....		3,067,362		Average 72.4%	Tot. 223	Av. 67.3%

CITIES AND TOWNS WITH COMPULSORY PASTEURIZATION BY-LAWS

St. Lambert, Que.
Lachine, Que.
Toronto*, Ont.
Hamilton, Ont.
Windsor, Ont.
St. Catharines, Ont.
Galt, Ont.
Carleton Place, Ont.
East Windsor, Ont.
Ford City, Ont.
Iroquois, Ont.
Iroquois Falls, Ont.
Kirkland Lake, Ont.
Leamington, Ont.
Richmond Hill, Ont.
Saskatoon, Sask.
Unity, Sask.
Kerrobert, Sask.

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*Except 200 quarts per day certified milk.

An Approach to Mental Hygiene*

DR. J. W. MacNEILL

Commissioner of Mental Services, Saskatchewan

WHAT is mental hygiene, and why is it necessary? Hygiene means the preservation and improvement of health—hygiene means prevention of disease. Mental hygiene, of course, means the prevention of diseases of the nervous system of a functional nature of any kind.

The mental hygiene movement in America was started some 20 years ago by Clifford Beers. Clifford Beers was a young business man of New York, who had a mental breakdown, and who was sent from one hospital to another, private and public, for treatment. He recovered from his mental illness and set out to interest the people and the medical world in the correction of abuses from which he, himself, suffered. He wrote a book, "A Mind That Found Itself." The movement spread and it was soon found necessary to include prevention in the programme; it was soon found that mental diseases were not due to an evil spirit, that they were not entirely due to heredity, and that environment and early training had considerable to do with the conditions, and that the patient himself was not to blame.

Mental hygiene is endeavouring to show that the man with a mental handicap is not to blame any more than the man who is lame because of hip joint disease. Mental hygiene is endeavouring to stop the flow into our institutions, in which we have, in Canada, around 25,000 people.

Physical hygiene has been given a considerable amount of attention by the profession and the public. Pollution is the cause of typhoid; if an outbreak of typhoid occurs, the people ask at once the source of the pollution. It was not always so. In the reign of Henry VIII, the people looked upon it as a visitation. The people have been educated considerably in regard to the prevention of tuberculosis. Now, physical hygiene is not an end in itself. It is only a means to an end. After all, it is not the life one lives that counts; it is the quality of that life. It is the character, the personality. It is the service rendered. It is what the individual can give as a result of his or her mental equipment. If that mental equipment is impaired, society is the loser in proportion to the mental impairment.

The Objects of Health

The objects of health are the pursuit of happiness, the pursuit of efficiency, the development of the ability to face squarely the personal problems of life. These objects are not dependent on physical health,

Presented before the Public Health Nursing Section, Canadian Public Health Association, 20th Annual Meeting, Regina, June, 1931.

but they are essentially dependent upon mental health. The individual is only a factor in the community; he is only a part of his environment. For instance, in the case of smallpox or any other contagious disease, we segregate the individual. His personality does not enter into the matter. It is as an individual fits or misfits into the environmental niche that he does or does not become a mental or social problem. The whole system of civilization is built on intelligent activity, and this activity—this efficiency—depends on mental hygiene, or mental health. It is to attempt to bring about those orderly associations of ideas, those healthful interests, those normal attitudes towards life, that mental hygiene is directing its attention, that it is directing its course.

In departure from mental health it is not so much a disorder of intellect we are dealing with, as a disorder of personality; as a disorder of emotion; a disorder of behaviour; a disorder of conduct. These maladjustments of emotional life are susceptible to control through external influences to a degree that intellectual capacity is not. More and more it is found to be a matter of securing the right environment for the child in its early years.

Professor Wm. Burnham, Clarke University, Mass., U.S.A., says that mental hygiene depends, generally, on orderly association of ideas, healthful interests, a normal attitude towards life and proper thinking, attention to the present situation, and a proper balance between stimulation and response—between work and play. For the prevention of mental disorders and the development of healthful habits of mental activity, these are essential. Mental hygiene deals with individuals who are active and productive members of the community, capable of full citizenship. The purpose is to retain them in these surroundings and avoid the necessity of removing them for treatment to institutions, and avoid the loss to society thus incurred.

Personality disorders are due, in part at least, to faults of management and faulty environment. Dr. Buzzard of London, in an article to the profession, has this to say of nervousness: that there is no such unitary group; it includes everything from irritability to dementia—headaches, fainting spells, fears, restlessness, fatigue, paralysis, criminality, hysterical fits. He states that all functional nervous disorders are mental. Let me turn your attention to some of the weeds that have choked the plant we would see flourish. To my mind the strongest and most obnoxious is one that was sown in ignorance and that has been nourished on fear. I refer to the fallacious belief, deeply implanted in the public mind and waiting a long-delayed exhumation by our profession, that so-called functional nervous disorders or "nerves" are not mental disorders. Surely the time has come to discard a verbal quibble that is unworthy of a scientific profession If we recognize, and cause to be recognized, that there are all degrees and kinds of mental disorders, we shall gradually, but surely, break down

the barrier that at present separates "nerves" from insanity, and that preserves for the latter the position of a mysterious and malign ogre lurking in the background and ready to pounce upon its victims from an unseen world. No harm is or ever can be done by dispelling ignorance or clearing up mystery. The fear of insanity, the fear of the unknown, the fear of something coming on them without provocation and finding them defenseless, haunts a multitude of patients and prevents that peace of mind which is the first essential in restoring their "nerves." Tell them that their symptoms are mental, that they have long suffered from a disorder of mind, and familiarity will breed contempt in place of unspoken fear.

Hysterias, psychasthenias, neurasthenia, and we may include some of the severer forms of mental disease, such as dementia praecox—this "nervousness" is not weakness of the nerves, not fatigue, not exhaustion, but a maladjustment. There are numerous theories regarding these conditions.

The Normal Child

What is a normal child? What are the characteristics of the normal child? "The normal child plays happily, or even aggressively, with others, occupies itself with concrete and objective things and interests, takes the knocks and disappointments of life casually and without prolonged rancor, confides freely and openly with its parents and companions, and happily substitutes another occupation for one that is forbidden, or at the time unavailable or inadvisable."

The Abnormal Child

"The abnormal child keeps by itself; does not seem able to get on common ground with other children; gets absorbed in its own day dreams and fancies and resents being called out of them; is sensitive and takes knocks and disappointments as slurs or injustices, resents them, broods over them and regards itself as a martyr; nurses its grievances in its own breast, not confiding its trouble to others but continuing the sense of injury and injustice; in general, keeps its thoughts to itself; and when its chosen occupation is denied it, goes off by itself with a sense of injury and does not try to take up another, but lets the mind dwell on unproductive fancies and vague, impractical aspirations. Such a child is more likely than others to develop these mental conditions." The condition is the result of an imperfect response on the part of the patient to the social aspects of his or her surroundings.

Sticking up for the rights of the child may be the means of bringing on mental ill-health. Pushing the too diligent girl, or helping the neurotic boy with his fight on the street may, later, result in his or her nervous breakdown.

The child who is prone to a mental breakdown will have sensitive-

ness to the disagreeable and painful. This condition is developed on a basis of an over-impressionability of the nervous system in persons who have not had the kind, or degree, of early training that their particular constitution called for. This condition is dependent upon the individual's conflict within himself, and not directly upon any outward circumstances. The process by which the symptoms develop is unconscious, and thus is not under the patient's control.

The First Step in Mental Hygiene

When people begin to accept this approach to the study of nervous manifestations of disease, the greatest stumbling block in practice will disappear. The psychoneurotic will no longer be the helpless and irritating puzzle that he still too often appears, but will rather be one to be studied and helped back to the right way and remade into a valuable asset for the social body.

The way to produce the sane, normal man, the man with mental health, is described in Huxley's Essay on a Liberal Education. He says the man who has had a liberal education, the man who enjoys full mental health, is "one whose body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear, cold, logic engine, with all its parts of equal strength, and in smooth working order, ready, like a steam-engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of nature and of the laws of her operations; one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or art, to hate all vileness and to respect others as himself."

A Rural Prenatal Programme

M. McCUAIG, Reg.N.

Western Supervisor of the Victorian Order of Nurses

PRENATAL care is that part of maternal care which has as its object the complete supervision of the pregnant woman, in order to preserve the happiness, health and life of the mother and baby and to instruct the mother so that she will give intelligent care to her baby after it is born.

Any programme for adequate prenatal care should include the protection of the mother during the complete maternity cycle, the prenatal, intranatal and postnatal.

It is only during pregnancy that the proper preparations can be made for the all important natal and postnatal care. The relationship of these three stages can be best expressed by quoting from Dr. Adair. "Prenatal care is not an end in itself but only a means to an end. Good prenatal care is nothing but the foundation for good natal attention; neither is complete in itself and if either is inadequate both may result in failure; nor are they complete without the best postnatal care. Improper postnatal care may thwart the result of good prenatal care."

The success in maternity work depends not only upon the care received during one of these periods, but upon the continuity of service from the beginning of pregnancy until six weeks after confinement, or until the mother is well again.

Probably never before has the question of maternal care aroused as much interest as at present, and this is due to the attention that has been given to the continual high maternal death rate in this country; it is significant to note that in spite of the development of the public health movement, maternal mortality rates have remained high.

The outstanding causes of maternal deaths are puerperal septicaemia, toxemias of pregnancy, hemorrhage and accidents at birth; these, to a marked extent, are known to be preventable.

A report from the Burnside Hospital, Toronto, points out that of 1,020 women who attended the prenatal clinic and were confined in hospital, only one woman died and she died from heart disease. Of sixty-five patients who showed signs of pre-eclampsia, only one developed eclampsia and that because she refused to carry out orders.

A recent study of a maternity centre's records, by Louis I. Dublin, shows a maternal death rate of 2.2 as compared with a rate of 6.2 for mothers living in the same district but not receiving this special care. It is stated that team work between doctors, nurses and lay people was the secret of this accomplishment and that the team work was possible because the nurse played her part. Wherever there has been an organized effort to provide adequate maternity care, it has resulted in

reduced maternal mortality. Dr. Richard Bolt says: "It is well recognized that the successful outcome of prenatal care depends largely upon early examination and observation by the physician and regular systematic follow-up work with careful instruction on the part of the trained public health nurse. The medical technics and nursing routines have been thoroughly worked out and tested by experience in field and hospital, and where these have been applied from early pregnancy until the successful termination of the event, a satisfactory outcome for both mother and child is reasonably expected."

For adequate maternal care, an informed public demanding that care is necessary. The health authorities, the medical and nursing professions must accept the responsibility of interpreting this need to the public.

Nurses and doctors are the people primarily concerned with maternity, and their relationship is of great importance. In all maternity work the recognition of the leadership of the medical profession is essential, and the nurse must appreciate the fact that every detail of maternity work originates in and is guided by the medical profession.

The extent and character of this work is dependent on the medical committee and local doctors. As yet, many doctors do not understand the work of the public health nurse and they do not realize that prenatal and postnatal nursing supervision in no way interferes with their service. This difficulty can be overcome only by discussing the work with the local doctors and gaining their confidence. To gain this confidence, the nurse must have a thorough knowledge of the service and be able to teach. The nurse who gives bedside care has an unusual opportunity to convince a doctor as to the value of educational work, and frequently, through good service and tolerance, doctors who previously refused to co-operate become convinced of the value of the work not only to their patients but to the community as a whole. Every opportunity should be accepted to interpret our work to the medical profession, to face difficulties and to establish a good relationship. A community's acceptance of an adequate maternal programme is dependent to a marked extent upon the team play and the loyal support existing between the nursing and medical profession.

A prenatal programme in a rural community has the same objectives and the same programme as in the city, but has in addition numerous problems unknown in the city. There are greater distances and fewer health workers, and greater social problems.

Perhaps the most important consideration in any maternal programme is the type of nurse employed to do this work. The attitude of the nurse toward maternity work is of primary importance. No matter how extensive her knowledge, unless she is convinced of the possibilities of her work, really appreciates the fineness of it all, and has a real love for it, her contribution is limited. The nurse who is not alive to the creative side of this work is utterly unable to interest, or, when necessary, "to sustain" the expectant mother. Possibly in no

other branch of nursing is contact between patient and nurse as intimate, and the amount of constructive teaching which she can do will depend to a great extent upon her ability to gain the confidence of the mother.

One nurse in a rural district says that time spent having tea with a patient in an isolated district is time well spent. These women are often very lonely and hungry for some one to talk to, one "who understands."

Practically every expectant mother, no matter how adequate medical supervision is, requires the assistance of some one with leisure who has a sound practical knowledge of maternal welfare work, to answer questions, dispel fears and consider the every day details of their lives. This does not take the place of medical supervision but supplements it and, in a well-rounded-out programme, one is the complement of the other.

The nurse must be able to teach, have a definite plan and be able to re-adjust it as occasion arises. Certain points are of sufficient importance for a nurse to consider at every visit: (1) Regularity or irregularity or entire absence of medical supervision; (2) general appearance, expression, weight, et cetera; (3) temperature, pulse and respiration; (4) elimination, constipation, diarrhoea, urinalysis; (5) oedema—where: face, legs; (6) disturbed vision—think of accompanying symptoms; (7) vaginal discharge—bloody, yellow, white; (8) nausea, vomiting; (9) persistent headaches; (10) condition of breasts; (11) varicose veins; (12) flatulence; (13) dyspnoea; (14) diet—very important—for mother and baby; exercise, sleep and fresh air; (15) amount of water; condition of teeth; (16) foetal life; and (17) mental attitude.

If the nurse is keen and knows the significance of various conditions, she is often able to detect early symptoms and, if working in close contact with the doctor or clinic, serious complications may be warded off.

Carefully written reports should be sent to the doctor, clinic or hospital after each visit, reporting conditions found and teaching given.

Pregnancy is a physiological condition but there is no condition which so quickly may become pathological. It is, therefore, necessary to instruct each patient at her first visit to report at once to the physician anything that may affect her well-being.

Nutrition should take a very important place in the instruction of the pregnant woman. The baby can receive the proper elements for growth and life only through what the mother eats. We are also told that certain vitamins protect the mother against septicemia.

The nurse who has a car can carry with her sample layettes, teach the mother how to make them and how to make use of what she has on hand, give instruction about the preparation for delivery if she is to be confined at home, as well as instruction on the proper clothing for herself during pregnancy.

Up to the present time, prenatal group teaching has not been

developed to any marked extent in Canada, but sufficient has been done to show the value of it.

The chief advantages are:

1. There is a decrease in travel time, leaving the nurse more time for teaching and allowing her to make many more contacts.
2. More effective teaching can be done when demonstrations are possible and exhibits are available.
3. The fact that mothers come to the clinic and show an interest, means that they will better respond to teaching; being away from home there are fewer interruptions.
4. There is also the social side of it, the opportunity to discuss common problems and exchange ideas.

This programme is not practicable in most of our rural districts on account of lack of means of transportation. Consequently we find ourselves with a feeling of responsibility toward the community, how we can best reach our people and interpret to them the value of such a service.

The nurse, while visiting in the homes, should do her best to explain the prenatal service, how it can be obtained and the absolute necessity of it. She should accept every opportunity to explain the service to lay organizations, such as Home and School Clubs, Women's Institutes and Local Councils of Women, also church groups. This responsibility cannot be too strongly emphasized.

In some of our rural districts in the west where it is almost impossible to keep in very close touch with the cases during the winter months, the nurses follow them carefully by correspondence. The nurse taking such a personal interest makes the patient realize that it is worth while, and that some person who is interested and understands can help her.

In one district (rural) the prenatal cases increased from 20 to 35 in three years. The best publicity is the service rendered and this nurse made it a point to tell her patients that if they valued the service to tell all their friends about it, and their testimony would be of greatest value.

We know that our rural districts have not as well organized services as have the urban centres; but if all health agencies work together and interest lay people in the services, we may soon have the people demanding adequate maternity care and then we can expect improvement.

In conclusion I would like to say that in rural districts, home visiting seems to be the most satisfactory method. The success of such a service is to a marked extent dependent upon the co-operation of the nurse with the medical profession and her ability to interpret the value of such a service to the public.

The visiting nurse has a great power in her hands, for the call of sickness in the home is the open door to the life history of the family. We can never separate the diagnosis and treatment of disease from guidance in health. It is our privilege as doctors and nurses together, not only to save the lives entrusted to us but to create a better measure and quality as well as quantity of life for the future.

Some Unusual Cases of Syphilis*

HARRY R. ELLIOTT, M.D.

The Special Treatment Clinic, Toronto General Hospital

THE cases of syphilis reported herewith present some unusual factors as seen in acquired accidental infection; transmission through a syphilitic mother; possible transmission through a congenital syphilitic; failure of transmission through a syphilitic mother after her second marriage to a non-syphilitic husband; serological and mucocutaneous relapse in an early case who had received intensive treatment from the beginning of his infection; and early neurological relapse in a well-treated case. This short presentation serves to focus attention, therefore, on the atypical rather than the typical, on the unexpected rather than the expected, as seen in the routine work of a large special treatment clinic.

Acquired Accidental Genital Infection

L. G.—Male. Age 43.
Sore appeared, Nov. 4, 1931. Six weeks.
Reported to clinic, Dec. 16, 1931. Sore untreated.
W. S.—Male. Age 27.
Sore appeared, Dec. 11, 1931.
Reported to clinic, Dec. 21, 1931.
Probable incubation period from Nov. 20, 1931.

Very nearly 100 per cent of syphilitic genital infections are contracted in the usual manner, so that a primary lesion appearing on the genitals, not preceded by intercourse but obtained in an innocent manner can be classed as the unusual.

Wm. S., a single man, age 27, gave a history of a "sore" on the penis of ten days' duration. He stated that he had not had an exposure. This statement was taken with the proverbial "grain of salt," but, on further questioning, the patient absolutely denied ever having had intercourse. So sincere did he appear that interest was aroused and a definite effort made to clear up the seemingly impossible. After about a half-hour's conversation, the patient stated that there was another man, a fellow employee, L. G., attending the clinic that same night, and he wondered if there might be any connection there with his case. On investigation it was found that L. G. first attended the clinic on December 16, 1931, having then an untreated genital sore of six weeks' duration. His history stated that there was much oedema of the prepuce; it could not be retracted to see the sore; and a very profuse, dirty, offensive, watery discharge drained from under the prepuce. Dark field examination of this discharge showed it to be teeming with *Spirochaeta pallida*. L. G.'s infection had been present and untreated, therefore, except for moist saline compresses, for a period of six weeks, well over the length of time required for the incubation period of Wm. S.'s infection. The same toilet had been used by these two, in common with the rest of the workmen. This was recorded in the history as the most probable source of Wm. S.'s infection.

It may be that the patient, recognizing L. G. at the clinic, hit upon this very ingenious method of covering up the source of his own infection. How-

*Presented before the Academy of Medicine, Section of Preventive Medicine and Hygiene, Toronto, March 31, 1932.

ever, a clinician with a very wide experience, present at the time, was inclined to accept this provisionally as a genuine acquired accidental genital infection.

Another interesting but very sad case of accidental acquired infection was brought to our notice in the following:

Husband's exposure	*May, 1930.*	
Husband's sore appeared	*July 2, 1930.*	*Wife 8 months pregnant.*
Wife had baby born	*July 28, 1930.*	*Wife's Wass. May 19, 1929. Neg.*
Wife's Wassermann "P.R." Kahn 2+		
Wife rash and sore throat. Wass. V.S.P.	*Oct. 13, 1930.*	
Baby's Wassermann negative	*Oct. 27, 1930.*	*3 mons. after birth.*
Baby rash. Wassermann V.S.P.	*Nov. 20, 1930.*	*4 mons. after birth.*
Two other children negative	*Feb. 14, 1931.*	
One child condylomata. Wass. V.S.P.	*Dec. 19, 1931.*	
Other child condylomata. Wass. V.S.P.	*Jan. 6, 1932.*	

M.D., a married man, age 26, reported as a single man with a penile sore on July 2, 1930, giving a history of exposure two months previously. The sore was not typical, but his Wassermann reaction was very strongly positive. His wife, who was eight months pregnant at the time and apparently knew of his complaint and visit to the hospital, had been told by him that he was free of disease. The baby was born July 28, 1930. The routine Wassermann test of the mother at this time was returned, "Please repeat"; and the Kahn test was two plus. Her Wassermann test done at a previous confinement, May, 1929, fourteen months previously, was negative. Beacuse of the positive Kahn test, the social service worker had this woman return for a re-check of her blood. On October 13, 1930, it was found to be very strongly positive. The patient than gave a history of rash and sore throat, present for three weeks. Later in the same month, October 27, 1930, the baby's blood was examined serologically and found to be negative. However, one month later, or four months after birth, the baby developed a rash and was found to have a four plus Wasserman test. This in itself is unusual, as, according to Holt, if three months pass without evidence of syphilis, the probabilities are that the child will escape. Two other children present in the home were examined in February, 1931, four months after syphilis had been diagnosed in the mother, and both were serologically negative. However, the close contact between the mother and child, during the florid secondary stage, sufficed to allow infection, as, almost one year later, both developed condylomata about the anus and on examination were found to have very strongly positive Wassermann reactions.

Unusual Transmission of Infection

D.B.—Female. Age 41. Diagnosis, cerebro-spinal syphilis

1	*Pregnancy*	*—Miscarriage*
2	"	*—Stillborn*
3	"	— "
4	"	*—Born alive. Died in 5 days*
5	"	— " " "
6	"	— " " "
7	"	— " " "

Patient married second time. Husband—negative.

8	*Pregnancy*	*All living non-syphilitic children.*
9	"	
10	"	
11	"	
12	"	
13	"	
14	"	
15	"	

D. B., a married female, 41 years of age, had a diagnosis of cerebro-spinal syphilis. In all, there were fifteen pregnancies, the first resulting in a miscarriage; the next two, in two still-born babies; the next four, in four living children, all of whom died within the first five days; and the remaining eight, in eight living children. One might expect to find the first of these living

children to be infected, but all are healthy and with negative serological findings. This is probably explained by the fact that the last eight children were by her second husband, who had a negative Wasserman reaction.

Another interesting case presenting some unusual aspects of transmission through the mother was brought to light in the following:

Mrs. S. Age 52. Wassermann V.S.P. (mother)
Children:
Ben S. Age 31. Wassermann V.S.P.
Wife of Ben S. Wassermann V.S.P.
2 children by her 1st marriage negative.
Mrs. C. T., a daughter age 28, negative
Mrs. T. S., a daughter, age 26, negative
Mr. A. S., a son, age 24, V.S.P.
Mrs. A. M., a daughter, age —, negative
Mrs. J. W., a daughter, age —, negative
Mrs. G. S., a daughter, age —, V.S.P.
Mrs. J. S., a daughter, age —, negative
Mrs. W. S., a daughter, age —, negative
Miss R. S., a daughter, age —, V.S.P.
Miss H. S., a daughter, age —, negative.
Mr. W. S., a son, age —, negative

Mrs. S., age 52, was admitted to hospital in October, 1927, complaining of vomiting and headache, with history of diplopia. On examination it was found that she was quite deaf, memory poor and cerebration slow. Eyes reacted sluggishly to light. Reflexes were present and equal. The laboratory examination revealed a very strongly positive blood Wasserman, a very strongly positive spinal fluid Wassermann, with an increase in cell count to 74 and a positive globulin test. On investigation it was found that the eldest of the family of 12, a son age 31, had a very strongly positive Wassermann. His wife, although she had been married before and had given birth to two uninfected children, had at the time of this test a very strongly positive blood Wassermann reaction; she absolutely denied the possibility of extramarital exposure, and, in view of the serologically negative children, one might safely assume that she did not acquire her infection from her first husband. Therefore, we must suppose that she acquired her infection from her present husband —a case which is probably unique in that we have a congenital syphilitic infecting his partner. As the mother had received no treatment, one might expect that the second child, a daughter, age 28, would show a positive blood Wassermann, but, on testing, it was found negative. Consequently, one might expect any subsequent children to be sero-negative, but all the way through her child-bearing period this mother gave birth to two sero-negative children and then to a strongly sero-positive child. Thus, in a total of twelve children we find four with very strongly positive bloods. (The family is arranged in the order of birth as shown.)

The unusual manner of transference in this case is probably best explained by Stokes in discussing latency in syphilis:

"Latency is a state brought on by the defense mechanism of the body, even without treatment, and like the famous title: 'All Quiet on the Western Front,' it covers in reality every form of warfare characteristic of the disease. While in some places in the body, fibrosis is taking place, in others—due to a drop in local tissue resistance—there is a breaking through of organisms, resulting in a temporary revival of spirochaetema from some impromptu chancre of the viscera. Then may follow the infection of the fetus, an outburst of delayed secondaries, a revival of some cutaneous form of relapse on skin or mucosa, a blood Wassermann or precipitation test coming positive after a period of negativity, a slight anaemia, a dropped eyelid, an infected partner, without genital lesion to explain it."

Mucocutaneous and serological relapse, while under vigorous treatment

A. S. Male. Age 30. Married

January, 1931	*Sore, immediate treatment*
	7 weeks, diarsonal 6 weeks, bismuth
April 1-April 22, 1931	*3 weeks' rest*
April 22, 1931	*Reported to clinic*
April 22-June 10, 1931	*Wassermann V.S.P.*
	Harrison's course
June 10, 1931	*Wassermann 1 plus*
July and August, 1931	*No treatment*
September 14, 1931	*Reported back to clinic*
	Wassermann negative
September 14-January 13, 1932	*Harrison's course*
	Wassermann V.S.P. at end of course
January 24, 1932	*Mucocutaneous recurrence*

A. S., a married man, age 30, contracted an infection in January, 1931. Treatment, which consisted of diarsonal and bismuth alternately, was started at once and continued for thirteen weeks. After a three weeks' rest he reported at the clinic where he was at once started on the usual Harrison's course and finished the course with a one plus Wassermann reaction. At this time he left town, was referred to another clinic, but took two months' rest instead. Returning in September, his Wassermann reaction was negative and he was again started on routine treatment with diarsonal and bismuth. He completed a full course—ten double treatments in fourteen weeks with good attendance—and was told to take six weeks' rest. However, the Wassermann reaction which was taken on his last visit was returned four plus and two weeks later he reported with a large mucocutaneous recurrence on his upper lip.

Recurrences such as the above are usually seen in those cases that receive insufficient treatment during the first few months of the disease, but such was not the case with this patient. It is a curious fact, however, that mucocutaneous recurrences are more prone to occur in the sero-negative primary patient than they are in the sero-positive primary or in the secondary. The percentages of recurrences are 10; 8.55; and 4.16, respectively (Stokes). It would seem that the gradually developing resistance of the patient has this effect on the reduction of mucocutaneous recurrences.

Neurological relapse without serological relapse, in an early well-treated case

P. S. Male. Age 31

June, 1930	*Sore. Dark field positive. Wassermann neg.*
June, 1930-August, 1930	*Harrison's course*
	2 1/2 months' rest
September, 1930	*Returned complaining of headache and mental confusion*
	Physical examination—Neg.
	Blood Wassermann—Neg.
Two days later facial paralysis developed	
	Spinal fluid Wassermann—V.S.P.

P. S., a male, age 31, contracted his infection in June, 1930. He was a sero-negative primary case, and was immediately started on a Harrison's course, which he completed in the prescribed time. Following this, he had a rather long rest period of two and one-half months. He then returned, complaining of headache and mental confusion. His blood Wassermann was negative, and he was sent to an internist, who reported physical examination negative. Two days after this, however, he developed facial paralysis and his spinal fluid was found, on examination, to show a strongly positive Wassermann reaction.

Editorials

POLIOMYELITIS

THE summer season brings with it the possibility of the usual increase in anterior poliomyelitis—a problem which must be faced at present with the use of convalescent or immune serum. While recent years have added greatly to our clinical knowledge of poliomyelitis and given us a useful weapon in its control, they have also rendered chaotic poliomyelitis statistics. Admitting beyond all question the existence of the abortive case and the preparalytic stage, admitting fully, too, the practicability of diagnosis in that stage, these additions to our knowledge of poliomyelitis have rendered impossible of comparison the statistics of poliomyelitis of the past with poliomyelitis of today. That is as it should be. It denotes progress. But vastly more progress must be made before control of poliomyelitis is accomplished and even before immune serum can be used to full advantage. Without a specific diagnostic test in diphtheria, antitoxin would be wasted in some instances but in many actual cases, otherwise not diagnosed, it would not be used. The rapid and efficient diagnostic test is a necessary complement to the efficient use of antitoxin. How much more necessary is such a test in poliomyelitis, a disease more difficult at present to recognize at its onset and in many cases more rapid in its progress from the stage in which specific treatment is useful to the stage in which it is of little, if any value. But real control requires more than a diagnostic test and more than immune serum. The lesson that treatment of the case is not control is evident in our experience with diphtheria which remained, till the advent of toxoid, the chief cause of death of children 2-14 years of age throughout Canada. The objective for adequate control is necessarily specific active immunization to eliminate not only the paralyses and deaths but also the disease itself. Such an immunizing agent for poliomyelitis is not yet at hand and for the present dependence must be placed on early diagnosis and early treatment.

Recent publications and much in the lay press have tended to cast doubt on the value of immune serum. However, the present status of immune serum can best be stated in the words of Aycock—that "its use needs no apology." The clinical experience in Canada, in the United States and in Australia, coupled with the readily demonstrable power to neutralize the virus in vitro in the laboratory, amply justify the continued and extended use of immune serum, tested and proven potent. The fact that recent efforts to prove its value in accord with statistical requirements have not been successful does not constitute, at present, an adequate reason or even excuse for failure to use it.

THE ANNUAL MEETING

THE 21st annual meeting of the Canadian Public Health Association, held in in conjunction with the 18th annual meeting of the Ontario Health Officers' Association, was the largest in the history of the organization. It was notable, however, apart from the record attendance and the number and character of the papers presented. Those responsible for the programme could not but feel gratified by the full attendance at all the sessions and the keen attention given by every audience. This lively interest, so manifest in discussion, formal and informal, in the advance of public health and preventive medicine, left no doubt in the minds of the Association's officers that the meeting fulfilled a need more urgent than at any other time since the Association took form.

The annual dinner, tendered by the Provincial Government of Ontario and the city of Toronto, suitably marked the Association's coming of age. The guest speaker, the Hon. Dr. Robert J. Manion, and the President, Dr. W. J. Bell, stressed the important place which public health occupies in Canada to-day. It was gratifying to the five hundred members present to realize the part which the Association has played in the advancement of public health during the twenty-one years of its history.

The providing of scientific and commercial exhibits added greatly to the interest and value of the meeting. The health education exhibits as contributed by the Provincial Department of Health of Manitoba, presenting the health education work in Manitoba schools, and by the Department of Health of the Province of Saskatchewan, constituted a most valuable contribution. The exhibits of the Public Health Engineering Section and of the Public Health Nursing and Laboratory Sections also merit detailed description, which it is hoped will be published later. The co-operation of the nationally organized voluntary health agencies in presenting their activities was greatly appreciated by all present. The commercial exhibits, too, were unusual both from point of numbers and interest, and added much to the success of the meeting.

No resolution presented to the meeting was received with greater enthusiasm than that expressing the thanks of the Association to Dr. J. T. Phair, who for eleven years has served as Honorary General Secretary. Only those who have served as officers of the Association or as members of committees can know the extent of the work he has undertaken and so effectively conducted. The present position of the Association is, in a very large measure, due to his untiring efforts.

Important matters relating to the conduct of the Association and its future work were brought before the meeting in the reports of the General Secretary, the Editorial Board and the Honorary Treasurer. Abstracts of these reports are presented for your consideration in the following pages.

REPORT OF THE EDITORIAL BOARD[1]

(Condensed)

DURING the year 1931 the publication of the Journal has been directly in charge of the Board, meetings of which have been held monthly. In that period, eighty-five papers and twenty editorials were edited and published, as well as much departmental and sectional material.

Circulation.

The Association has provided an audit of the circulation at the end of each six months, meeting fully the requirements of the Canadian Association ot Advertisers. The average monthly circulation for the six months ending December 31, 1931, was 2,633. When the Association took over the Journal in 1928, the total circulation was approximately 1,200. At the end of December, 1930, it was 2,200; at the end of June, 1931, 2,500; and at the end of December, 2,630. Its growth, therefore, is most encouraging. Ninety-five per cent of the circulation is paid, with less than five per cent of the subscribers in arrears. The Board is indebted to the Provincial Medical Officers of Health for their co-operation in enrolling as members of the Association all medical officers of health, public health nurses engaged in provincial services, and other members of their departments. The Journal is thus reaching practically every health officer in Canada.

Advertising

As the Association receives no grants, it is dependent on the receipts from advertising to meet the major portion of the cost of printing the journal. The Advertising Committee is pleased to report that twenty-nine firms have utilized space in 1931. Thus, in spite of the increasing difficulties facing advertisers, the Journal has been reasonably well supported during the year.

Plans for the Future.

Your Board feels that steps must be taken to place the Association on a substantial financial basis, which will permit of the employment of an office secretary and at least a part-time editor. For the past four years the work of the Journal has been conducted without salaried assistants, with the exception of part-time services rendered for a portion of this period. The entire editing of the Journal, advertising solicitation, maintenance of circulation and financing, therefore, have been carried on by members of the Board who were already fully occupied with their own duties. It is urged, therefore, that a committee be appointed to lay plans for the proper financing of the Association and its Journal. Your Board feels it has been demonstrated that the Journal has a definite place of usefulness and that there is a need for its continued publication, but it is essential that steps now be taken to meet the responsibilities of publication at the end of this calendar year.

REPORT OF THE GENERAL SECRETARY, 1931-1932[1]

IN reporting the activities of the Association, it has been found difficult to confine my official remarks to the calendar year. I am, therefore, presuming that it will be acceptable to the members of the Association if matters dealt with during the twelve months which have elapsed since the last meeting of the Council and this session, are included.

[1]*Presented at the 21st annual meeting, Canadian Public Health Association, Toronto, May,* 1932.

Your Executive Committee has met on three occasions and all matters referred to it by either the Council or the Association at its annual meeting have been disposed of, either as directed by the Council or in the best judgment of your officers.

The Association's membership has not only been maintained but has definitely increased. Not only have the various Provincial Departments of Health demonstrated increased interest, despite the need for rigid economy, but certain of the Sections of the Association, particularly that devoted to the field of public health engineering, have made a very definite drive for membership. As a result of this effort some forty-eight new names have been added to the membership list of the Association. The officers of the Section of Public Health Engineering have earned the thanks of the Association for their efforts.

Unfortunately, it was not found possible by the Federal Government to include the Association among those health agencies receiving Government subsidy. This fact in no way reflects upon the interest in the Association of the Deputy Minister and members of the staff of the Department of Pensions and National Health, but must be accepted as an evidence of the attitude of the Treasury Board towards such expenditures.

In keeping with the changes in the by-laws of the Association, the question of the details associated with the introduction of sustaining membership was referred to the consideration of the Executive Committee. Your Committee, in consequence, has established the annual fee for this type of membership at $200.00 per annum. The London Life Insurance Company of Canada has been the first to express its support of the work of the Association through this form of membership. Your Committee plans to enlist the support of other similar organizations during the coming months.

It is with deep regret that I must record the death of three pioneer members of the Association during the past year—Dr. Peter H. Bryce, late of the Federal Government service, Ottawa; Dr. William H. Hattie, formerly Provincial Health Officer, Nova Scotia, and latterly Professor of Hygiene and Public Health, Dalhousie University, Halifax; and Dr. George G. Melvin, late Chief Health Officer, New Brunswick.

Before concluding this report, might I be permitted to say that, for eleven years, it has been my privilege to stand before this Association at its Convention meeting and present the annual report of the General Secretary. During this period of time, much in the way of public health progress has been achieved. Much that was new in preventive medicine has been tried and accepted or discarded. The official health agencies have been strengthened, and the voluntary agencies have expanded. The scientific field has been more widely explored, and health education has been advanced, so that the public now recognize their part in the new era of personal and community hygiene. How has the Canadian Public Health Association contributed to this forward movement? First by banding together all of those engaged, part-time or full time, in the field of public health in Canada, and bringing together,

annually, those within reach of the place of meeting, for free and full discussion of all things old and new in public health. The Association has made it possible for its twenty-five hundred members to obtain, without effort on their part, the best publication of its kind available; and it has done this because a small band of enthusiasts considered that such an organization could contribute much to the future of public health in Canada. By unremitting effort and great personal sacrifice on the part of this group, much has been contributed through the Association to the public health of Canada. As an outsider, but one so placed as to have an opportunity to appreciate the time and effort expended by this small group, I may ask if the rank and file of the Association appreciate what has been and is being done. If it is appreciated, might I suggest for consideration that a serious and early effort be made to lighten the load. Unless this is done, I can not but see a compulsory retrogression of this unique organization in the immediate future.

J. T. PHAIR,
General Secretary.

STATEMENT OF INCOME AND EXPENDITURE

For the two years ended December 31, 1931

INCOME

Advertising	$11,222.42	
Subscriptions	5,313.33	
Miscellaneous Revenue	213.12	
Reprints	16.64	
		$16,765.51

EXPENDITURE

Printing and Mailing Costs	$11,676.42	
Promotion Expense	309.06	
Commissions to Advertising Agencies	876.91	
Rent	140.00	
Stenographic Services and Honoraria	2,905.00	
Stationery and Office Supplies	240.31	
Telephone, Telegraph and Postage	257.18	
Convention Expense { Toronto, 1930 / Regina, 1931	457.37	
Discounts allowed and Exchange	169.84	
Bad Debts	46.12	
		$17,078.21
Total expenditure	$17,078.21	
Gross income	16,765.51	
Net loss for period	$ 312.70	

LABORATORY SECTION

G. B. REED, PH.D. AND A. L. MCNABB, D.V.Sc.

*Tubercle Bacillus Isolation by Culture and Animal Inoculation**

DR. A. L. MCNABB and DR. W. M. WILSON
Division of Laboratories, Ontario Department of Health

ON the 24th of March, 1882, fifty years ago, Robert Koch announced his discovery of the tubercle bacillus. In that epoch-making communication Koch emphasized the long period, two or three weeks, required for tubercle colonies to become visible, in contrast to the day or two required for colony formation of other organisms recognized at that time. In 1887 Nocard and Roux added glycerine to the culture medium to prevent drying; later the paraffin seal was introduced as an aid to this objective. Many culture media have been described; among those in common use are Dorset's egg medium, modified Dorset's egg medium, Petroff's and egg yolk agar as described by Herrold.

Animal inoculation, generally used in preference to culture methods for the isolation of tubercle bacilli, is a time-taking and costly procedure. It has been carried out in our laboratories only when specifically requested by the physician sending the specimen. Such requests have been much more frequent in recent years. In 1929, 453 guinea pigs were used for this purpose; in 1930, 923 and in 1931, 1651. The sources of the 1,048 specimens investigated by animal inoculation from March, 1931, to February, 1932 (inclusive), are shown in Table I.

TABLE I

Source of Specimens Examined March 1931 to February 1932 (inclusive)

Sputa	466
Urine	269
Pleural fluids	101
Catheter urines	82
Pus	38
Spinal fluids	32
Miscellaneous fluids	18
Faeces	15
Knee fluids	14
Ascitic fluids	9
Wrist fluids	2
Milk	1
Tonsils	1
	1048

Intercurrent infection frequently causes death of test animals before a satisfactory reading can be made, thus

**Presented at the 21st Annual Meeting, Canadian Public Health Association, Toronto, May, 1932.*

necessitating the use of additional animals for repeat inoculation of many specimens. This is evident in the excess of the number of guinea pigs used over the number of specimens so tested in Table II.

Horton of Detroit and Woolley of Loomis Sanatorium, New York, have reported recently that, in their experience, cultural methods yielded a higher percentage of positive results than animal inoculation. As cultural methods would thus allow of a better service to physicians, at a lower cost to the Province, it was decided to compare the efficiency of cultural methods, animal inoculation and microscopic examination in routine work in our laboratories.

TABLE II

ANIMAL TESTS ON 1,048 SPECIMENS—MARCH 1931 TO FEBRUARY 1932 (INCL.)

	Specimens inoculated	Guinea Pigs inoculated	Positive Results	
			Number	Per cent
March	140	266	19	
April	101	140	15	
May	65	186	7	
	306	592	41	13.4
June	88	132	11	
July	89	130	7	
August	76	99	11	
	253	361	29	11.5
September	74	98	7	
October	88	131	6	
November	80	103	4	
	242	332	17	7.0
December	77	112	9	
January	70	112	9	
February	100	142	5	
	247	366	23	9.3
Total	1048	1651	110	10.5

Procedure

Eight sputa were selected each week-day from routine specimens and subjected to the three methods of investigation—microscopic examination, culture, and animal inoculation.

Concentration

The first 238 specimens—Series I, were treated with an equal quantity of 3 per cent sodium hydroxide for 2 hours at room temperature, neutralized with 10 per cent hydrochloric acid using brom-cresol purple as an indicator, and centrifuged for 30 minutes; the supernatant fluid was then carefully withdrawn leaving about 1 cc. on the sediment at the bottom of the tubes for the tests.

The 105 specimens of a second series, Series II, were treated with 3 per cent hydrochloric acid for 2 hours at room temperature, neutralized by 3 per cent sodium hydroxide and centrifuged, etc., as in the first series.

Smears were made from the sediment for microscopic examination and 1.5 cc. was inoculated into the groin of a guinea pig. If death of the guinea pig occurred within 6 weeks and autopsy did not show positive diagnostic lesions, another pig was inoculated. The guinea pigs were regularly autopsied at six weeks. The diagnosis of tuberculosis in the guinea pig was made only after demonstrating tubercle bacilli in the lesions.

Six tubes* of culture media were inoculated from the sediment of each specimen, using sterile capillary pipettes for transfer.

In the first series, 238 specimens, the cotton stoppers were coated with paraffin; in the second series, 105, tight rubber caps were placed over the cotton stoppers. The cultures were incubated at 37°C., and examined weekly, smears being made of any showing visible growth. At six weeks, all cultures were finally examined and smears made, whether or not growth was visible.

The results were as shown in Table III. Of 343 sputa, 51, or 15 per cent, were positive by direct smear; 66, or 19 per cent, by animal inoculation, and 75, or 22 per cent, by culture. The necessity for microscopic examination of all cultures at the end of the incubation period, whether growth is evident or not, is demonstrated in the fact that in 14—11 in the first series and 3 in the second—the cultures were found positive on microscopic examination of smears, though microscopic growth was not evident.

Initial concentration of sputum by treatment with hydrochloric acid was found more satisfactory than with sodium hydroxide. The medium proposed by Woolley proved most satisfactory in our series; modified Petroff's medium, however, gave very good results. Whey agar was not found to be satisfactory. Rubber caps proved more efficient in preventing drying than the paraffin seal. Positive cultures were obtained as early as the tenth day in several cases, whereas the shortest period in which a guinea pig died with typical diagnostic lesions was 17 days. As some cultures were positive and others negative, though from the same specimen, it is felt that if more culture tubes were inoculated from

TABLE III

RESULTS OF DIRECT SMEAR, GUINEA PIG INOCULATION AND CULTURE OF 343 SPECIMENS OF SPUTA

		Positive Results					
		Direct Smear		Culture		Guinea Pig	
	No.	No.	Per cent	No.	Per cent	No.	Per cent
Series I	238	38	16	52	22	46	19
Series II	105	13	12	23	22	20	19
Total	343	51	15	75	22	66	19

Two of Woolley's potato, egg and glycerin slants—two modified Petroff's milk, egg and glycerin, 1 modified Dorset's egg and glycerin, 1 whey media with potato, egg and glycerin.

each specimen, a higher percentage of positive results would have been obtained thereby.

An analysis of positive results is shown in Table IV. Of the 343 sputa specimens, 85 were found positive by one or more methods; 75, or 88 per cent of all positives were found so by culture; 66, or 78 per cent, by animal inoculation; and 51, or 60 per cent, by direct smear. There was agreement in the three methods in 47, or 55 per cent of the positive results. There was agreement in animal inoculation and culture in 56, or 70 per cent. Culture proved positive while animal inoculation failed in 99, or 22 per cent of all positives. Animal inoculation was positive while culture was negative in 10, or 12 per cent. Direct smear was positive with cultures negative in 4. The fact that no one method gives 100 per cent accuracy is well recognized, and evident in these data. One method serves as a check on the other. Our findings are in keeping with those of Horton and of Woolley that cultural methods yield a higher percentage of positive results than any other method.

TABLE IV

ANALYSIS OF POSITIVE RESULTS

	Series I	Series II	Combined
1. Culture+ Guinea pig+ Direct Smear+	34	13	47
2. Culture+ Guinea pig− Direct Smear−	13	6	19
3. Culture+ Guinea pig+ Direct Smear−	5	4	9
4. Guinea pig+ Direct Smear+ Culture−	4	0	4
5. Guinea pig+ Direct Smear− Culture−	3	3	6

guinea pigs in 66, or 78 per cent, and direct smear in 51, or 60 per cent. Culture was positive, while guinea pig isolation was not obtained in 19; and the guinea pig was positive, while culture was negative, in 10. Direct smear was positive in 4 in which the culture was negative.

Culture, therefore, has distinct advantages over animal inoculation; it yields a higher percentage of positive results; it is less liable to technical errors; it enables an earlier positive diagnosis to be made in many cases; sufficient cultures can be made at the

Summary

Comparison of culture, animal inoculation and direct smear examination was made on each of 343 specimens of sputa. In 85 a positive result was obtained by one or more of the methods. Cultures were positive in 75, or 88 per cent of all positives,

first planting to eliminate the necessity for reculturing in case of negative results; it is free from the disadvantage of guinea pigs dying from intercurrent infections; it is less expensive.

The following is the routine at present used at the Central Laboratories.

For sputa (1) *Direct smear examination.*
(2) *Culture if requested by the physician.*

For other specimens—
Microscopic examination.
Guinea pig inoculation.
Culture.

Formula of Woolley's Medium

Potatoes cooked in skins, 50 minutes at 15 pounds pressure,
Peeled, weighed and riced.....500 grammes
Water .....425 cc.
Brought to boil with constant stirring.
Strained through cheese cloth.
Glycerin ..... 75 cc.
Strained and double quantity of filtrate of eggs added.
1% crystal violet (approximately 1 cc. to 200 cc.)
Strained through cheese cloth.
Sterilized with 15 pounds air followed by 15 pounds steam.

Modified Petroff's Medium

Sterile milk .....200 cc.
Nutrient broth (made from beef extract) .....200 cc.
Eggs .....800 cc.
Glycerin ..... 60 cc.
2% Solution malachite green..... 60 cc.
Mixed, strained, sterilized as above.

Modified Dorset's Medium

Eggs .....600 cc.
Beef Infusion .....300 cc.
Glycerin ..... 22.5 cc.
No peptone or salt.
Mixed, strained, and sterilized as above.
No titration was done in preparation of any of these media, except the whey media.

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PUBLIC HEALTH NURSING

RUBY M. SIMPSON, Reg.N., and MRS. GEORGE HANNA, Reg.N.

Health Work in a Junior College

THE health work done among the resident students in our Junior College has been designed to be as highly preventive as possible and to take care of the curative phase as well. Our classes have been well attended and all remediable defects corrected.

Of a registration of fifty-four boys and eighty-two girls in 1930, the Grade XI students have an average class attendance of 95.01 per cent teaching days, while Grade XII shows an average of 97.6 per cent.

The students pay a small fee known as "hospital fee" on entrance. This fee covers their medical examination and hospital treatment with the exception of the services of a specialist or hospital care outside the college.

There is an eight-bed hospital in one wing of the girls' residence with a graduate nurse in charge. Students are examined by the college doctor as soon as possible after entrance; those who have not been vaccinated are vaccinated immediately, and other inoculations are given if desired.

Records are kept of examination, and defects are noted and referred to those who can best help correct them; *e.g.*, postural defects are reported to the gymnasium instructor, special diet requirements to the dietetian, while certain idiosyncrasies noted are referred to the teachers for their kind consideration. Weights are checked once a month, and if gains are not made, the reason is sought.

Good use has been made of the chest clinic at the general hospital and of the provincial laboratory for blood tests, urinalyses, etc. One of last year's students reported miserable summers with hay fever. His case was investigated at the provincial laboratory, vaccine was administered by the college nurse, and he reported a much better summer this year. Students reporting frequent colds have also been treated with vaccine, which has apparently proved helpful. One case of asthma was aided by putting the patient to bed for a few days whenever there were indications of fatigue. It was the physician's hope that this student would outgrow the complaint.

Every student is requested to report all illnesses, no matter how minor they may seem, to the nurse at once. They are all treated as communicable until diagnosed otherwise, and in this way there has been very little spread of communicable disease. Colds, which usually spread so rapidly, have been held in check by coughs and sneezes being reported early and the student isolated.

There has been the fullest co-operation from all, from the president in making possible the carrying out of the plans, from the teachers in their reports, and from the parents through their permission to have defects corrected. No pupil is allowed to miss a class without a certificate from the nurse. The girls are allowed two excuses from "gym" each month, and these are recorded also. As the nurse is in residence, she becomes very well acquainted with the students and slight defects are quickly recognized.

Physical defects are reported to the parents and, with their permission, are remedied as soon as possible. Probably because the students are from fairly well-to-do families, there has been little difficulty in having eyes attended to, teeth fixed, etc.

The school day starts with a walk of ten minutes outdoors before breakfast, and it is found this makes the students wide awake and ready for their meal. They must report for all meals unless excused by the dean or nurse. Supervised recreation must be attended after school. All students are encouraged to drink milk. Milk and biscuits are supplied for those who wish them during the study period at night. Lights must be out by eleven, and as a teacher or nurse visits each room, open windows are assured. The observance of the health rules is expected of all.

E. E. Graham, Reg.N.,
Regina College, Regina.

EPIDEMIOLOGY AND VITAL STATISTICS

A. L. McKAY, B.A., M.D., D.P.H., and F. W. JACKSON, M.D., D.P.H.

Trachoma in Manitoba

In an effort to get control of the trachoma situation in the province, two nurses, one of whom could speak German, were employed in the summer of 1930 and given special training in the Eye, Ear, Nose and Throat Section of the Winnipeg General Hospital. Following this, a house-to-house canvass was made in those districts where trachoma was thought to be prevalent. Altogether, approximately 10,000 individuals were examined by these nurses, and 2,300 of this group were found to be suffering from some eye condition. Of this number, 1,000 were suspected of having trachoma.

On the completion of this survey, a series of clinics under the direction of qualified oculists were held in November, 1930, at several points in the area. All eye conditions which had been discovered by the nurses were referred to these clinics for definite diagnosis and outline of treatment. A second series of clinics of the same type were held in June, 1931.

Total number of clinics held during 1930 to September, 1931..... 12
Total attendance at clinics..... 1594
Number with positive trachoma.. 289
Number with suspect trachoma.. 188

In order to get some continuity of treatment and have some individual responsible for this activity, the Department appointed, on a part-time basis, a qualified oculist, Dr. E. H. Alexander, who had recently returned from the continent, where he had spent a considerable part of his time investigating European methods of handling trachoma. Dr. Alexander gives from two to three days a week of his time, and clinics are held at regular intervals at various points in the infected areas. These clinics are held under the auspices of the local practising physicians, and the cases are rounded up and brought to the clinics by the public health nurses in the district, who also assist at the clinic. All cases are prescribed for by Dr. Alexander, and the treatments carried out by the local practising physicians. Unfortunately, at the present time most of this work is being without any provision for remunerating the doctor. It is hoped, however, that arrangements will be made whereby those municipalities not already doing so will undertake the obligation of supplying some recompense for the treatment of at least the indigent patients. An educational campaign is conducted in the schools by the nurses in the various districts, which is supplemented by literature from the Department.

Total number of clinics held from September, 1931, to May, 1932 26
Total attendance at clinics.....2056
Number with positive trachoma.. 446
Number with suspect trachoma.. 105

Arrangements have also been made with the Winnipeg Infectious Disease Hospital for the care and treatment of such cases as require hospitalization.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—APRIL, 1932.

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	—	9	1	123	129	22	15	2	13
Scarlet Fever	1	36	72	437	412	102	21	22	27
Measles	—	2	116	1325	3529	177	425	18	433
Whooping Cough	9	22	1	209	596	114	132	13	67
German Measles	—	1	—	71	37	†	6	7	18
Mumps	—	54	—	347	1422	116	113	19	95
Smallpox	—	—	—	—	9	1	9	—	2
Cerebrospinal Meningitis	—	1	—	1	9	4	—	—	2
Anterior Poliomyelitis	—	—	—	—	—	—	—	—	—
Typhoid Fever	—	—	4	72	21	6	3	3	2
Trachoma	—	—	—	—	—	28	—	—	2

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not reportable.

CORRESPONDENCE

Public Health Intelligence of the Health Organisation of the League of Nations.

Geneva, May 3, 1932.

TO THE EDITOR:

Dear Sir:

May I through the courtesy of your columns bring to the notice of the public health administrators the facilities that exist in the Health Organisation of the League of Nations for the supply of information relating to the detailed application of different public health methods in various countries. In addition, comparative information is available with regard to epidemiological statistics and public health legislation.

The Health Organisation is willing to supply, as far as possible, data on the above branches of preventive medicine.

Enquiries are, however, limited to those from the heads of large administrations or the heads of scientific institutions, who should indicate the purpose for which the information is required, in view of the amount of work that unconsidered requests necessarily involve. Furthermore, enquiries should be limited to information that is not already in the medical press.

All enquiries should be addressed to the Medical Director, Health Section, marked "Public Health Intelligence," League of Nations, Geneva, Switzerland.

Yours faithfully,

LUDWIK RAJCHMAN,

Medical Director, Health Section, League of Nations.

INDUSTRIAL HYGIENE

F. C. PEDLEY, B.A., M.B., D.P.H. AND J. G. CUNNINGHAM, B.A., M.B., D.P.H.

IMPINGER DUST SAMPLING APPARATUS AS USED BY THE UNITED STATES PUBLIC HEALTH SERVICE

DURING the past two decades students of Industrial Hygiene have taken a very keen interest in dust, particularly siliceous dust. The excessive mortality of workers in certain dusty trades, such as hard rock mining and stone cutting, has warranted the amount of study devoted to this subject. One of the essential elements in such a study is an instrument for determining quantitatively the degree of dustiness in a given atmosphere. Numerous apparatuses have been devised for the purpose, the most noteworthy being the sugar tube, the Palmer water spray apparatus,the Kotzé konimeter, the Anderson and Armspach dust determinator and finally the Greenburg impinger.

Of all these devices, the Greenburg Impinger appears to be the most efficient. The machine in its present form consists of a pyrex glass tube 13 m.m. in diameter and approximately 325 m.m. in length. The end of the tube is tapered to an orifice 2.3 m.m. in diameter. Attached to this end by supporting rods and 5 m.m. from the orifice is a glass plate. The earlier instruments made use of a metal plate but trouble with corrosion occurred and the glass plate was substituted, making the machine all glass. This tube is held by a two-hole rubber stopper inside a glass flask and the orifice end is immersed in liquid (usually distilled water). The flask is connected with a suction through a calibrated flow meter.

In operation, air to be sampled is drawn through the glass tube against the glass plate, through the liquid and out the flask through the flow meter. In its passage through the glass tube, the velocity of the air increases as it travels through the tapered end to the orifice. It impinges at high velocity on the glass plate and is immedately arrested by it. The liquid in the flask then holds it and the air passing from the flask to the flow meter is found to be practically dust free. Actually more than 90% efficiency is claimed for the apparatus.

When sufficient air to make a representative sample has been drawn through the machine, a sample of the liquid is placed in a Sedgwick-Rafter counting cell and the number of dust particles counted. From this the total number of particles in the liquid can be computed and so the number per cubic foot of air sampled.

By employing an ocular micrometer, the size of the dust particles can be measured.

Three sources of suction may be used with the machine—a hand driven pump, an ejector with compressed air, and an electric suction apparatus.

Leonard Greenburg and J. J. Bloomfield, Public Health Reports, 47, 654 (March 18, 1932).

INCIDENCE OF TUBERCULOSIS IN THE INDUSTRIAL POPULATION

THE industrial policy holders of the Metropolitan Life Insurance Company are those who carry less than $1,000 insurance and pay their premiums on a weekly basis. They are for the most part wage-earners and may be considered as fairly representative of the industrial population of the United States and Canada.

In 1930 the death rate for tuberculosis in this group was 81.3 per 100,000. The death rate for the ordinary policy holders, that is to say, those carrying policies of $1,000 or more, was only 48.7 for 100,000 and for those carrying policies of $5,000 and over the death rate for this disease was 17 per 100,000. Evidently tuberculosis is a disease of the lower economic groups.

Despite the apparently high tuberculosis death rate of this group the improvement during the last 20 years has been astonishing. As an example, in 1911 the death rate of white male industrial policy holders in the age group 35-44 was 606.1 per 100,000. In 1930 it was less than one quarter, namely 141.0 for 100,000. Other age groups show similar striking reductions. Detailed tables are given of the death rates in all age groups for both sexes and for white and coloured.

The comparison of the figures of the sexes is of interest. Generally, females enjoy a lower death rate from tuberculosis than males. But in the period from 10 years to 25 years of age, the female death rate is significantly higher. Thereafter it is much lower. For example, in 1930 the death rate for white males age 15-19 was 34.3; for white females in the same age group it was 69.5. In the age group 45-54, the period of greatest mortality in the male, the death rate was 177.2 whereas the female rate was only 57.1.

The coloured rate is consistently higher than the white. In 1930 coloured males aged 20-24 had a death rate of 351.5—more than 4 times the rate for white males.

Apart from age and sex, occupation plays an important part in tuberculosis. The highest death rates for the disease are found among those exposed to siliceous dust. Cigar and textile workers, shoe factory operators, barbers and laundry workers appear to suffer an excessive mortality from tuberculosis.

The tuberculosis death rate among industrial policy holders in Canada is definitely higher than in the United States. On examination, however, the increase is due, apparently, to the excessive rates in Quebec, Nova Scotia and New Brunswick. Elsewhere the Dominion's record compares favourably with the United States.

This study lends statistical support to the belief that tuberculosis is an important disease to the industrial hygienist. In the aggregate it probably causes less economic loss than the common cold, but as a killing disease it is undoubtedly the greatest problem in industrial medicine, overshadowing all other diseases like lead poisoning which occupy a good part of the attention of students of industrial health.

Dr. Louis I. Dublin, Journal of the American Public Health Association, 22, 281 (March, 1932)

PUBLIC HEALTH ENGINEERING

T. J. LAFRENIÈRE, C.E. AND A. E. BERRY, C.E., PH.D.

THE Canadian Public Health Association convention held in the Royal York Hotel, Toronto, on May 25th, 26th, and 27th, was an outstanding success. The attendance was unusually large and the programme was of a very high quality.

The meeting of the Public Health Engineering Section was, of course, of particular interest to engineers. Last year, at the first meeting of this Section at Regina, the attendance of engineers was not very large. This was to be expected. In the interval, however, membership in the Section has grown very rapidly and an attempt was made to have a programme which would be suitable for this group.

With Toronto chosen as the convention centre, the engineering personnel in this vicinity turned out in large numbers. During the three days of the convention, the Engineering Section held two Section meetings and on the opening day of the convention sponsored the programme given to the Ontario Health Officers' Association.

The engineering papers given both in the Section meetings and in the Ontario Health Officers' Association were highly instructive and much credit is due the authors for their work. These papers will appear in an early issue of the Journal.

Apart from the Engineering Section meetings, there were a number of papers which were of particular interest to the engineering profession. Probably the one of most importance was that of Dr. Eddy, who gave an address at the general sessions of the combined Associations on "The Contribution of the Engineer to Public Health Conservation." Dr. Eddy reviewed the measures which have been taken by engineers in the protection and advancement of public health activities.

The Executive of the Section was enlarged somewhat to include a chairman, vice-chairman, secretary and two trustees. The following officers were elected:

Chairman: G. H. Ferguson, Ottawa; Vice-Chairman: Theo. J. Lafreniere, Montreal; Secretary: A. E. Berry, Toronto; Trustees: R. H. Murray, Regina, and Marcel Pequegnat, Kitchener, Ontario.

On the second day of the convention, a very enjoyable luncheon was held by the Engineering Section in conjunction with the Laboratory Section. In all, over ninety were present and short addresses were given by two guests—Dr. H. P. Eddy, of Boston, and Dr. Augustus B. Wadsworth, of Albany. On the same day, a complimentary dinner was tendered to the delegates of the convention.

A further feature of considerable interest at the convention was the exhibits. These were both scientific and commercial. The scientific exhibits were from the various provinces and municipalities throughout the Dominion. Among the commercial exhibits were a number showing engineering equipment. All of these contributed to making the convention an outstanding success.

FOOD, DRUGS AND NUTRITION

H. M. LANCASTER, B.A.Sc., Ottawa, and E. W. McHENRY, M.A., Ph.D., Toronto.

The Relation of Income to Dietary Quality

THE advances made in nutrition in the past twenty years have made it possible to recommend diets for humans not only to satisfy the energy requirements but to ensure a proper intake of vitamins, mineral salts, and the necessary balance of proteins of different quality. While these recommendations may be offered it does not always follow that they will be accepted by the general public on account of financial inability or because of unwillingness. It is frequently said that popular presentation of nutritional subjects in the press is having a marked effect on the eating habits. To those in public health work it is interesting to learn whether dietary habits are in accordance with dietary teachings and to what extent they are governed by family income.

There has recently been published by the Medical Research Council of Great Britain a report giving the results of a study of dietary habits in St. Andrews, Scotland, by Cathcart and Murray. The investigation was of a thorough nature and precautions were taken to ensure accurate results. The diets of 154 families were studied, the families being so selected that the group represented a fairly accurate sample of the population.

Two dietary recommendations are generally used to determine the total intake of food, and the percentage as protein, fat and carbohydrate. The authors contrasted these recommended standards with the average results secured in St. Andrews.

	Total Calories	Percent total calories as Protein	Fat	Carbohydrate
Voit Standard	3055	16	17	67
Rubner Standard	2868	17	16	67
St. Andrew's Average	3119	11	35	54

Several interesting points are obvious. The people studied were on the average certainly securing a total amount of food which was adequate to meet their energy requirements, but the proportion of food constituents varies widely from the recommended standards. The protein intake was low, while that of fat was high. It is recognized that dietary standards do, and should, vary with geographical locations and habits of the people. Studies in the United States and in Europe in recent years have all shown a lowered intake of protein and an increased consumption of fat.

The opinion is commonly expressed that the proportion of the food constituents varies with the family income and that increased income brings an increased consumption of protein. To determine the correctness of this, Cathcart and Murray divided the 154 families into five groups depending on income, Group I having the lowest. These groups showed dietary constituents distributed as follows:—

Group	Total Calories	Percent total calories as Protein	Fat	Carbohydrate
I	2779	11.0	31.3	57.7
II	3157	11.1	34.1	54.8
III	3216	10.8	36.9	52.3
IV	3136	11.0	37.1	51.9
V	3573	11.4	40.8	47.8

While the average figures showed a satisfactory total, it is evident that the families in Group I were receiving an insufficient amount of food. Throughout the five groups the proportional intake of protein was constant. The poorer families were eating foods largely carbohydrate, while an increased income brought about a lowered carbohydrate and an increased fat consumption. This is perhaps the most striking result of the study, that an increased income brings about a large increase in fat consumption.

Cathcart and Murray sought to learn if there was any relation between the food intake in the different income groups and the height and weight of the children. They found a significant difference between the groups, those in the better paid groups being heavier and taller. The authors recognize that other factors than the diet must be considered. The children in the lower income groups were born of parents of poor physique; and malnutrition, poor housing and lack of hygienic environment have played a part not only in the present generation but in the previous ones. Not only must the total quantity be considered, but Cathcart and Murray did not consider the quality nor the supply of many food factors which would have a bearing on the nutrition of children.

There has been no study made of dietary habits of people in Canada. One of the type carried out by Cathcart and Murray would be valuable, but in light of present day teaching it is incomplete. We are interested to learn, of course, if the total amount of food consumed is sufficient, but we are also anxious to ascertain if its quality is satisfactory. A complete study would be most useful to public health workers.

E. W. McHENRY.

NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

British Columbia

DR. H. E. YOUNG, Provincial Health Officer, attended the 21st annual meeting of the Canadian Public Health Association in Toronto, May 25, 26 and 27, at which he presented a paper on the clinical aspects of the recent smallpox epidemic in Vancouver. He also attended the meeting of the Dominion Council of Health in Ottawa.

Dr. J. W. McIntosh, M.O.H., of Vancouver, represented the City at the meeting in Toronto and presented the epidemiological aspects of the smallpox epidemic. It is understood that the details of this epidemic, from which 16 deaths resulted, will be published shortly.

The May Bulletin of the British Columbia Board of Health reports 146 cases of typhoid fever during the year ended June 30, 1931. This gives a morbidity rate of 24.5—more than double that of the previous year. In one instance it was possible to trace the source of 14 cases to one dairy distributing raw milk supplied by a farmer who, at the time, was suffering

from a mild form of the disease, but later developed complications and died. While cases were reported in every month of the year, the vast majority occurred from August to December.

Studies carried out by the Provincial Board of Health on goitre show that among the 99,531 children examined, 5 per cent. had evidence of goitre. In some mountainous districts, the percentage was much higher; on the coast, much lower: 3.2 per cent. for Vancouver Island and 2.2 per cent. for the city and vicinity of Vancouver. The low rates may be due in part to the prophylactic use of iodine.

Alberta

DR. M. R. BOW, Deputy Minister of Health, attended the meetings of the Canadian Public Health Association in Toronto and the Dominion Council of Health in Ottawa during the latter part of May.

Dr. W. H. Hill, who has completed his D.P.H. course in the School of Hygiene, University of Toronto, has returned to Edmonton.

Saskatchewan

DR. F. C. MIDDLETON, Deputy Minister of Health, spent the last week of May in the east, where he was present at the coming-of-age meeting of the C.P.H.A. in Toronto and at the Dominion Council in Ottawa.

Dr. T. D. Kendrick, who spent the past year at the University of Toronto and obtained his Diploma in Public Health, has returned to Regina to undertake the direction of the trachoma problem in this province under the Department of Health.

Manitoba

DR. F. W. JACKSON, Deputy Minister of Health and Public Welfare, was a delegate to the C.P.H.A. Convention in Toronto, later going on to Ottawa to attend the sessions of the Dominion Council of Health.

The third Canadian Conference on Social Work was held in the Royal Alexandra Hotel, Winnipeg, on June 7th, 8th and 9th.

Dr. C. R. Donovan and Dr. N. R. Rawson, who have successfully completed their course for the Diploma in Public Health at the University of Toronto, have again taken up their work in Manitoba.

Ontario

THE Ontario Medical Officers of Health turned out *en masse* to the joint meetings of the Ontario Health Officers' Association and the Canadian Public Health Association, held in Toronto, May 25th, 26th and 27th. Keen interest in public health and preventive medicine was everywhere in evidence at the meetings, at which scientific and commercial exhibits were an added attraction. The accommodation and services at the Royal York Hotel were all that could be desired. Discussion of the various papers was full and frank. The 21st annual meeting was the most outstanding the Association has ever convened.

We regret to report the illness of Dr. John A. Amyot, Deputy Minister of Pensions and National Health. Dr. Amyot has been confined to his bed for several weeks. His many friends, old students and professional associates will hope for a speedy and complete recovery.

It is probable that the Nurses' Residence at the Listowel General Hospital will be closed as an economy move in the near future. It is proposed to house the nurses on the third floor of the Hospital.

Miss Jeanette B. Cottle, who has served for several years in northern Ontario, including St. Joseph's Island and Cockburn Island, has been appointed superintendent of the Englehart Red Cross Hospital.

Miss Margaret Jamieson, of Brantford, has been appointed to succeed Miss Berta Aldcorn as superintendent of the Peel Memorial Hospital.

Fire originating in the sun porch of the old wing of Kenora General

Hospital on April 14th necessitated the rapid removal of all patients to the new fireproof wing.

The Occupational Therapy Association held its biennial Street Fair in Toronto, on June 2nd, 3rd and 4th. In spite of the difficult times, the Fair was most successful, clearing about $5,000.

We regret to report the death of Dr. F. L. S. Holmes, who passed away on April 15th at his home in Kemptville. Dr. Holmes was Medical Officer of Health for Kemptville and the adjoining municipality for many years. He graduated in Medicine from Queen's University in 1877. After postgraduate work in Bellevue Hospital, New York, he settled in Kemptville, where, during his fifty years' residence, he took a keen interest in public health matters and community affairs. His genial presence and well-considered counsel will be greatly missed, not only in his home community, but in the wider field of the profession and in the meetings of the Ontario Health Officers' Association.

Quebec

THE following physicians have successfully completed their course for the Diploma in Public Health at the School of Hygiene, University of Toronto, and assumed the administration of their respective public health units: Dr. J. U. Bédard, Dr. A. Bélanger, Dr. A. Caux, Dr. E. Frenette, Dr. E. Lalande, Dr. E. Mondor, Dr. J. A. Patenaude, and Dr. J. A. L. Pelletier.

We regret to report the recent illness of Dr. Alphonse Lessard, Director, Provincial Bureau of Health. His early recovery is anticipated.

Dr. Wilder G. Penfield, neurological surgeon of Montreal, has been appointed Professor of Neurology and Neuro-Surgery at McGill University.

New Brunswick

IT is with regret that we report the death of Dr. George G. Melvin, late Chief Medical Officer of New Brunswick. Dr. Melvin continued his duties until a few months ago, when he resigned and went to California, hoping to recuperate his health. His death means a distinct loss to public health, both in this province and throughout the Dominion.

Dr. Wm. Warwick, Chief Medical Officer of Health, attended the meetings of the Canadian Public Health Association in Toronto and the Dominion Council of Health in Ottawa. We extend congratulations to Dr. Warwick on his election to the presidency of the Association for the year 1933. It is anticipated that the next meeting of the Association will be held under Dr. Warwick's leadership in St. John.

Plans are being prepared for the new section of the Jordan Memorial Sanatorium at Riverdale, N.B.

The Canadian Nurses' Association will meet in St. John, June 21st to 25th.

Nova Scotia

THE Hospital Association of Nova Scotia and Prince Edward Island met in Bridgewater on June 15th and 16th.

Honourable Gordon S. Harrington, Premier of Nova Scotia, formally opened the new Infirmary of the Nova Scotia Sanatorium at Kentville on April 15th.

Prince Edward Island

DR. B. C. KEEPING was the provincial delegate to the annual meeting of the Canadian Public Health Association in Toronto and the meeting of the Dominion Council of Health in Ottawa during the latter part of May.

Plans are being prepared for the construction of an 80-bed hospital at Brighton. The cost will be in the neighborhood of $200,000.

ALEXANDER DOUGALL BLACKADER

M.A., M.D., LL.D., M.R.C.S., F.R.C.O.

1847-1932

IN the death of Dr. Blackader, Editor-emeritus of the Canadian Medical Association Journal, on March 14, 1932, there passed away one of Canada's best loved sons. A leader in the profession, his record already written indelibly in the minds of men who have learned from him, worked with him or sought his help, his memory will be cherished by pupil, colleague and patient alike, and all will mourn the passing of a friend.

Dr. Blackader was born in Montreal in 1847. His preliminary education was obtained in Ontario. He entered McGill University in 1866, graduating in Arts in 1870 and in Medicine in 1871. After much postgraduate work he started practice in Montreal in 1877 and soon became especially interested in children, being one of the first on this continent to recognize diseases of children as a specialty. He initiated the first paediatric clinic in Canada and was one of the founders of the American Paediatric Society. He became Professor of Therapeutics and Pharmacology in McGill University in 1883, retaining the position till 1921 when he was appointed Emeritus Professor. In 1919 he accepted the chairmanship of a committee in charge of the Canadian Medical Association Journal and in 1931 assumed the chief editorship.

He was not then a young man, but with the apparent vigour and energy of youth and with a mind "circled through all experiences," he devoted himself unselfishly to the building up of that Journal which stands to-day as a monument to his memory. He resigned the editorship-in-chief in 1929 but continued, as far as his strength would allow, to contribute to the columns which he had founded. As a tangible expression of appreciation, the Canadian Medical Association established in 1929 the Blackader Lectureship in Diseases of Children. He had held many high offices and had been the recipient of many honours in his long life but this unexpected recognition of what he himself described as a "labour of love" was his most cherished token of esteem.

The Canadian Public Health Association extends deepest sympathy to those who must miss him most keenly—his family and colleagues.

Books and Reports

D. T. Fraser, B.A., M.B., D.P.H.; R. R. McClenahan, B.A., M.B., D.P.H.

Diphtheria, Past and Present: Its Aetiology, Distribution, Transmission and Prevention. *By J. Graham Forbes, M.D., F.R.C.P., D.P.H., Principal Assistant Medical Officer, London County Council; Late Milroy Lecturer, Royal College of Physicians. Publisher, John Bale, Sons & Danielsson, Ltd., 83-91 Gt. Titchfield Street, London, W.1, 1931. 832 pages. Price, 45/-. $10.00.*

This is a book of upwards of 800 pages, with an Introductory Note by the late Sir Frederick Andrewes, M.D., F.R.S., Emeritus Professor of Pathology, University of London.

The discussion, in the volume, on the aetiology of diphtheria, such as defective sanitation, rainfall, etc., in the light of present day knowledge of the bacteriological cause of the disease, is scarcely worth consideration.

Nearly one-half of the volume is taken up with an account of the distribution of the disease in England and Wales and its prevalence in 1930. This feature, while probably of high interest to health officers in Great Britain, appeals with little force to medical officers and practitioners elsewhere.

Of much greater interest is an account of the factors concerned in the spread of the disease, such as density of population, overcrowding, environment and seasonal influence. The influence of cows' milk in the spread of diphtheria referred to, is an additional argument in favour of universal pateurization. Of real interest are the chapters on diphtheria carriers, the importance of which in the spread of diphtheria is now universally accepted. Of additional importance is the treatment and control of the carrier. No entirely successful method has yet been achieved for this problem. As the author remarks, dependence in recent years upon the immunization of contacts is the most successful plan of lessening the infection from carrier cases.

The causes and epidemiology of diphtheria are now thoroughly understood, and the chief weapon possessed by medical officers for the control of this malady is the one discussed by the author in his most valuable chapter, *viz.*, that on Prevention. This weapon is the use of immunization by toxoid. There is no longer any doubt of the efficacy of this measure. Its value ranks with the proven results in cases of successful vaccination against smallpox. Experience in the larger communities of the United States of America, in Canada, and elsewhere, as described by the author, shows that by the free use of toxoid it is possible to reduce the incidence of diphtheria to very narrow limits.

This work with its wealth of statistical tables and detail of prophylaxis in diphtheria in many countries is a valuable book of reference, but the practical information it contains might well have been confined to a book of more convenient size.

JOHN W. S. MCCULLOUGH.

The Normal Child: Its Care and Feeding—(*Third Edition*). *By Alan Brown, M.D. Publisher, McClelland and Stewart, Toronto,* 1932. 263 *pages. Price,* $1.35.

The third edition of "The Normal Child will find a ready welcome from the medical profession, the nursing profession and mothers. The whole book has been thoroughly revised and certain chapters—Teeth and Tooth Development, Discipline, Education and Habit Formation—rewritten, incorporating such additions to our knowledge of these subjects as have been accepted since the last revision.

The previous editions are so well known to the profession in Canada

that there is no need for an extensive review of the subject matter. On reading the book, one catches a glimpse of the author, his knowledge of the infant, his thoroughness and meticulous attention to details so often neglected, his clear expression of a well-ordered mind. Each phase of the child's life is treated from the standpoint of a man who not only looks at the apparent well-being of childhood, but sees the child as the citizen of the future, whose conduct, failures and successes depend on his formative early years. Though the book is written primarily for mothers, the physician who is acquainted with its content is in a position to answer the questions, often perplexing, in regard to sleep, play, exercise, travel, discipline, the details of preparing common foods, etc. The common communicable diseases are considered and the value of specific immunization in diphtheria, smallpox and scarlet fever indicated. The extent of the problem created by these diseases in the absence of immunization, the chance of children contracting them and the chance of death therefrom, might have been shown more definitely, with advantage.

In spite of the low price of this book, the printing is clear and easily read. An useful index completes the volume, which is a definite part of Canadian public health literature.

BOOKS RECEIVED

Public Health Organization Report of the Committee on Public Health Organization. A publication of the White House Conference on Child Health and Protection. Publisher, The Century Co., 353 Fourth Avenue, New York, and London, 1932. 345 pages. Price, $3.00

Psychology and Psychiatry in Pediatrics: The Problem. The report of the subcommittee on psychology and psychiatry. A publication of the White House Conference on Child Health and Protection. Publisher, The Century Co., 353 Fourth Avenue, New York and London, 1932. 146 pages. Price, $1.50

Nutrition Service in the Field; Child Health Centres: A Survey (In one volume). A publication of the White House Conference on Child Health and Protection. Publisher, The Century Co., 353 Fourth Avenue, New York and London, 1932. *Nutrition Service,* 139 pages; *Child Health Centers,* 57 pages. Price, $2.00

The Heart Rate. By Ernst P. Boas, M.D., and Ernst F. Goldschmidt, Ph.D. Publisher, Charles C. Thomas, 300 East Monroe Street, Springfield, Illinois, 1932. 166 pages. Price, $3.50 postpaid.

International Studies on the Practice of Medicine as Related to the Prevention of Disease. Volume Three: England and Wales, Scotland, Ireland. By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. Publishers, George Allen and Unwin Limited, London; The Williams & Wilkins Company, Baltimore, 1932. 558 pages. Price, $5.00

Behaviour Aspects of Child Conduct. By Esther Loring Richards, B.A., M.D., D.Sc. With a foreword by Dr. Adolf Meyer. Publisher, The Macmillan Company, New York and Toronto, 1932. 299 pages. Price, $3.00

Human Sterilization. By J. H. Landman, Ph.D., J.D., J.S.D. Publisher, The Macmillan Company, New York, 1932. 341 pages. Price, $4.00

Quarterly Bulletin of the Health Organization of the League of Nations, Vol. I, No. 1 (March). A League of Nations publication, Geneva, 1932. 157 pages. Price, .50

American Public Health Association Year Book, 1931-1932. Published by the Association, 450 Seventh Avenue, New York, 1932. 232 pages. Price, $1.85

CURRENT HEALTH LITERATURE

These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (within three days) is requested in order that the journals may be available to other readers.

A Sporadic Case of Poliomyelitis—Dr. Mirsky reviews the clinical and laboratory findings in a case of poliomyelitis diagnosed in the pre-paralytic stage in the absence of an epidemic. The outstanding signs, with a temperature of 101.8, pulse 1.36, and flushed, slightly cyanotic face, were pain in the back on flexing the chin to the chest or the head to the knees. The spinal fluid showed 129 cells, mostly mononuclears, per cc. Serum was given intramuscularly, but some paralysis of the right lower extremity developed.

Dr. S. Mirsky, Canad. M.A.J., v. XXV, No. 5 (Nov.), pp. 595-596.

Relationship of Vitamin A to Respiratory Infections in Infants—No significant difference in the incidence or severity of respiratory infections was noted in the four groups of infants studied. The group which received the largest daily amount of Vitamin A through the addition of cod liver oil was not protected against respiratory infections to a greater degree than were the other groups.

Barenberg, L.H., and Lewis, J.M., J.A. M.A., v. 98, No. 3 (Jan. 16), pp. 199-202.

A Case of Food Poisoning Apparently Due to Staphylococcus—Dr. Jordan reports a family outbreak of violent vomiting, purging and prostration developing fairly suddenly about three hours after the evening meal. The outbreak is attributed to gravy which was made from canned chicken and partly used on the day of preparation without ill effects, then kept in the ice box for twenty-four hours, warmed and used again. A staphylococcus aureus was isolated from the gravy. A similar condition was produced in two human volunteers by feeding them filtrate from a culture of the staphylococcus. Additional evidence supporting previous work implicating the staphylococcus as a cause of food poisoning.

Jordan, Edwin O. and Hall, John R., J. Prev. Med., v. 5, No. 5 (Sept.), pp. 387-389.

Epidemiology of Scarlet Fever—Bacteriological control in cases with complications possesses the advantage of reducing materially the average period of isolation. Simple, uncomplicated cases were not released by bacteriological control earlier than the accepted period of twenty-eight days. The practicability of higher periods of isolation during late spring and summer, as suggested by the study, should be further investigated.

Gordon, J.E., J.A.M.A., v. 98, No. 7 (Feb. 13), pp. 519-523.

Tuberculosis in Young Females—In Michigan, as elsewhere, the female mortality rate from tuberculosis in the age group 15-29 is much higher than the male rate. Industrialization is not an important factor, and the problem is in the home. The influence of certain diseases and of pregnancy in relation to these rates is a problem for further research.

Deacon, W.J.V., Am. J. Pub. Health, v. XXII, No. 4 (April), pp. 3671374.